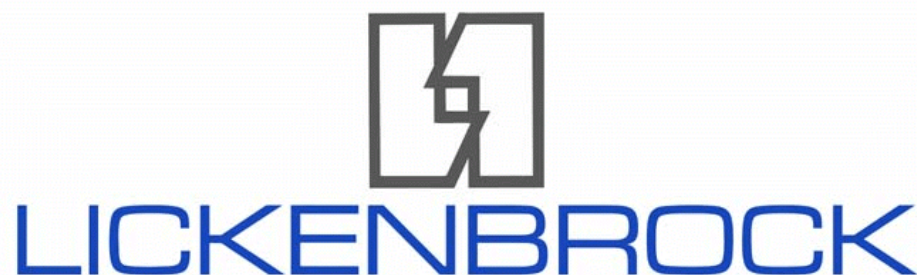


REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
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Algorithms and Software for Improved CT Imaging

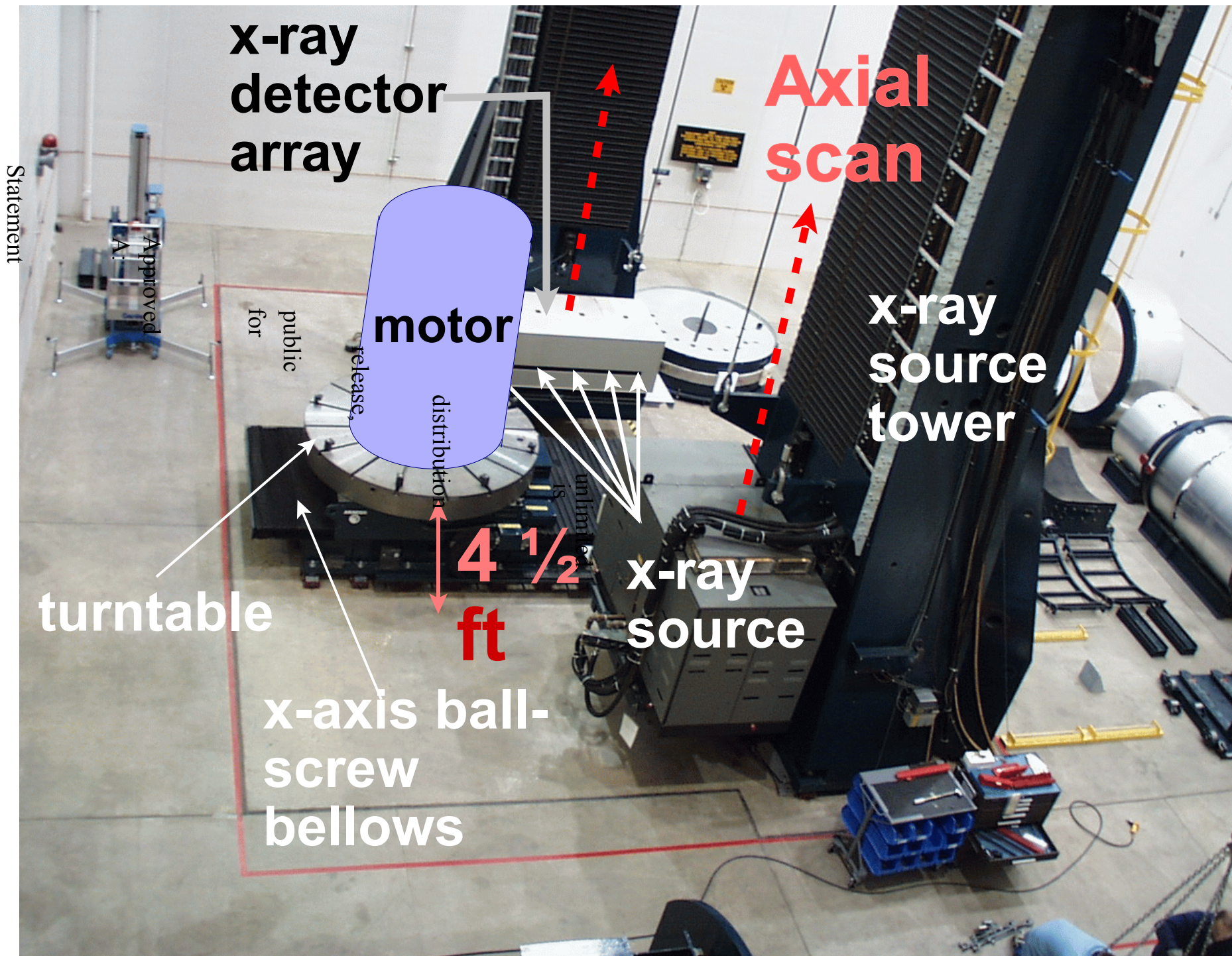
Promotional slides for Industrial Clients

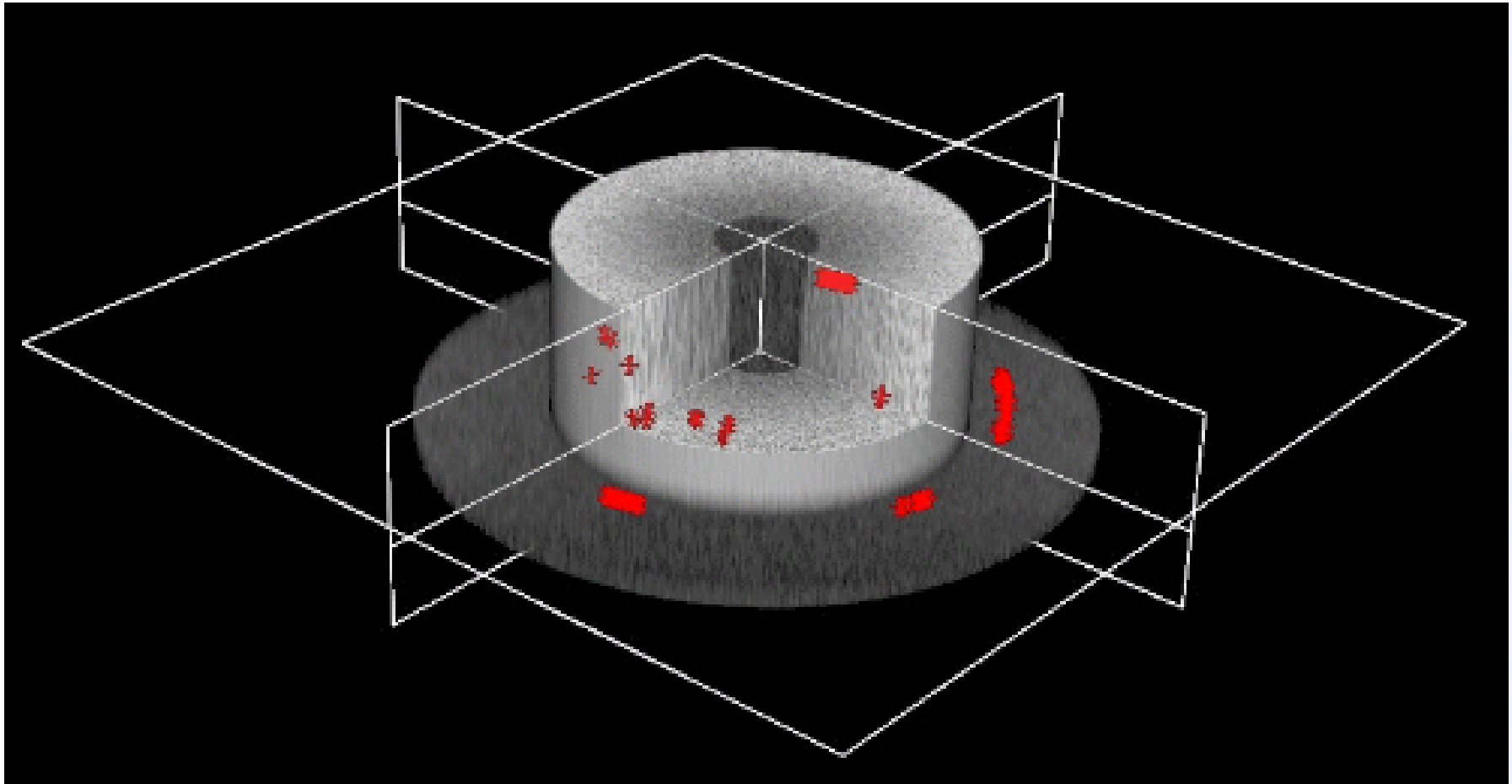
Tim Holmes, D.Sc.
CEO
Lickenbrock Technologies



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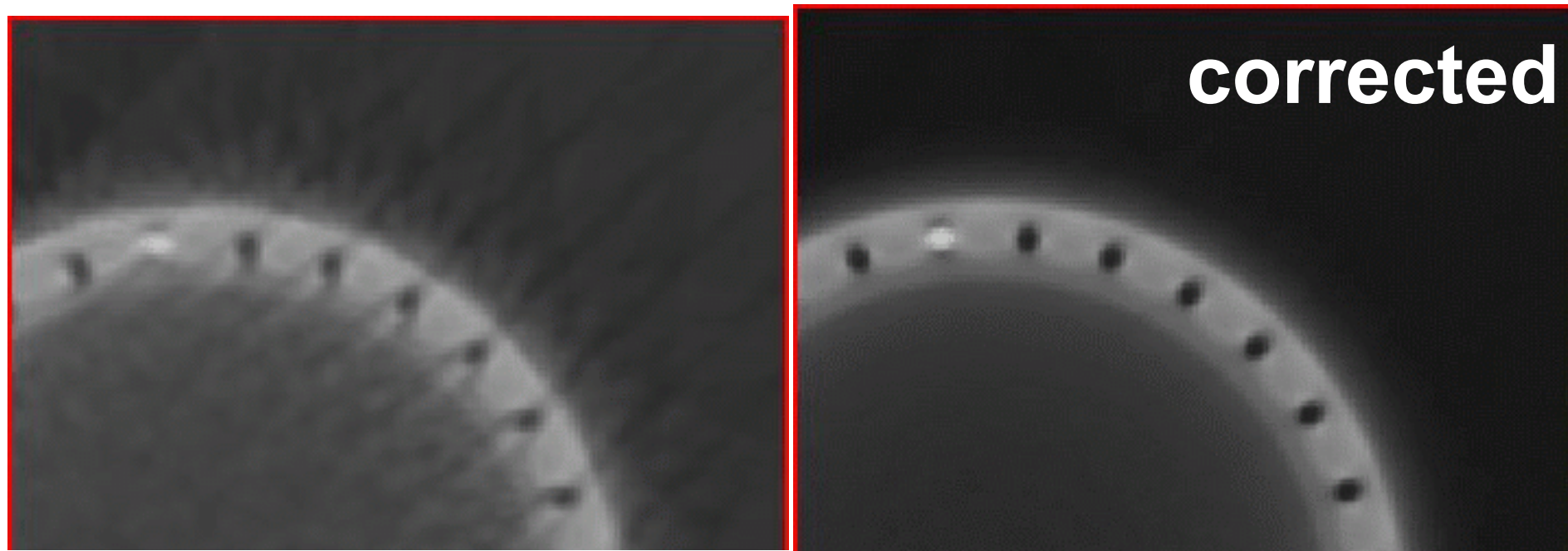
The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Air Force, the Department of Defense, or the U.S. Government.





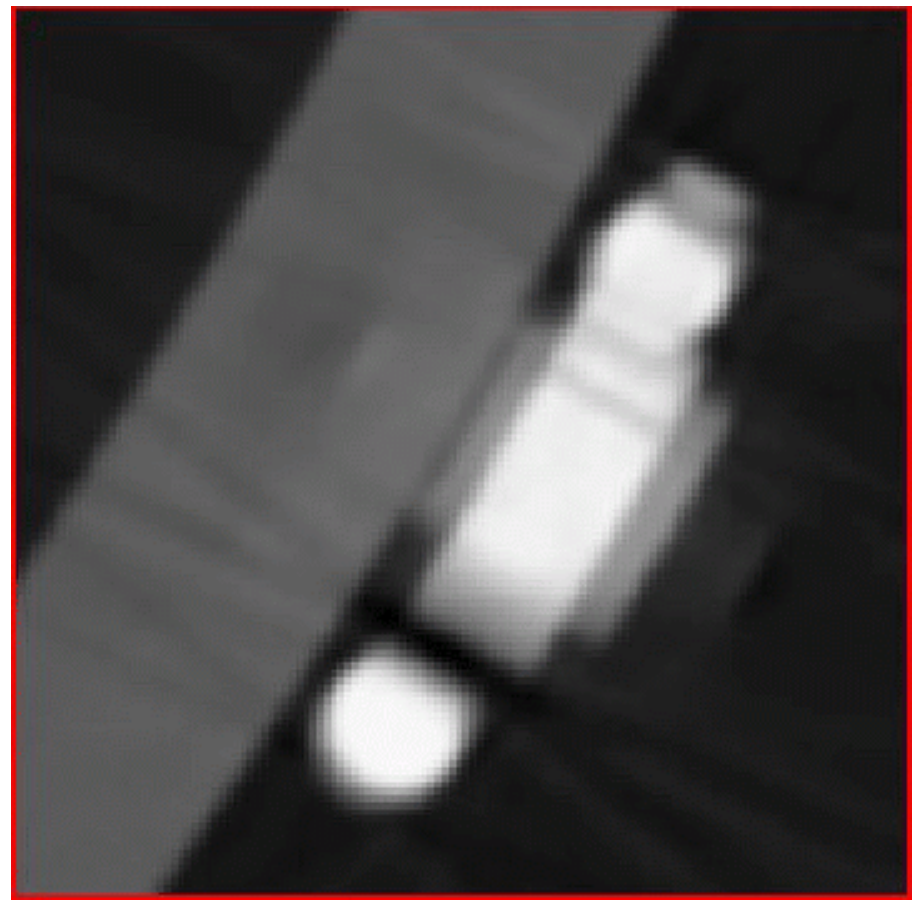
3D ANDES Viewer, showing a 3D phantom, which simulates an aerospace component, overlain with graphics that indicate locations of potential defects. The 3D viewer, with other analysis tools enable the capability to evaluate true positive detections from false positive detections.

Traverse mismatch correction



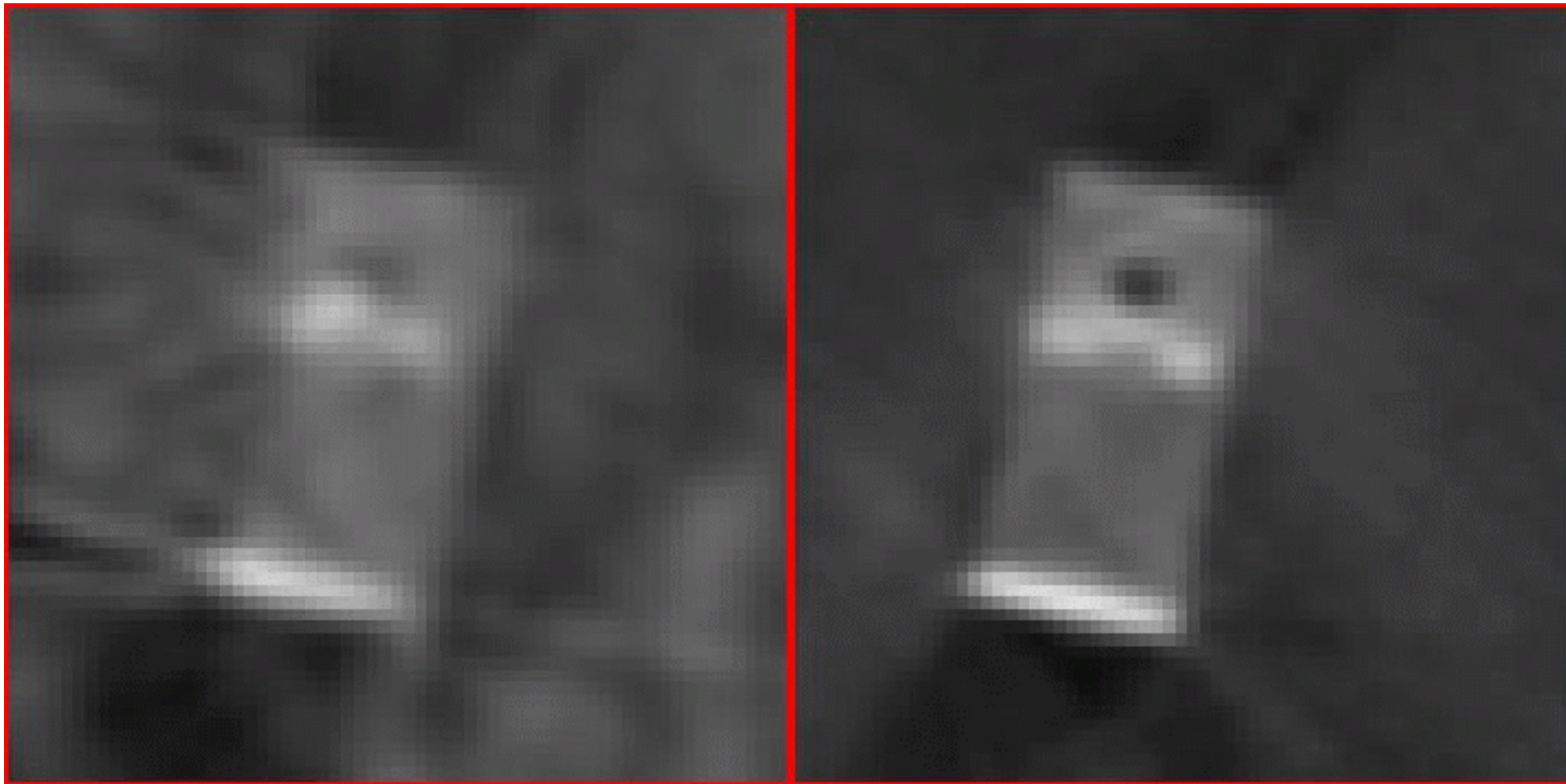
Example of the data corrections using an aerospace component . (a) The artifactual streaks are due to unavoidable geometric misalignments, called traverse mismatch. (b) Image resulting from the automatic detection and correction of the data for these misalignments.

Traverse mismatch correction



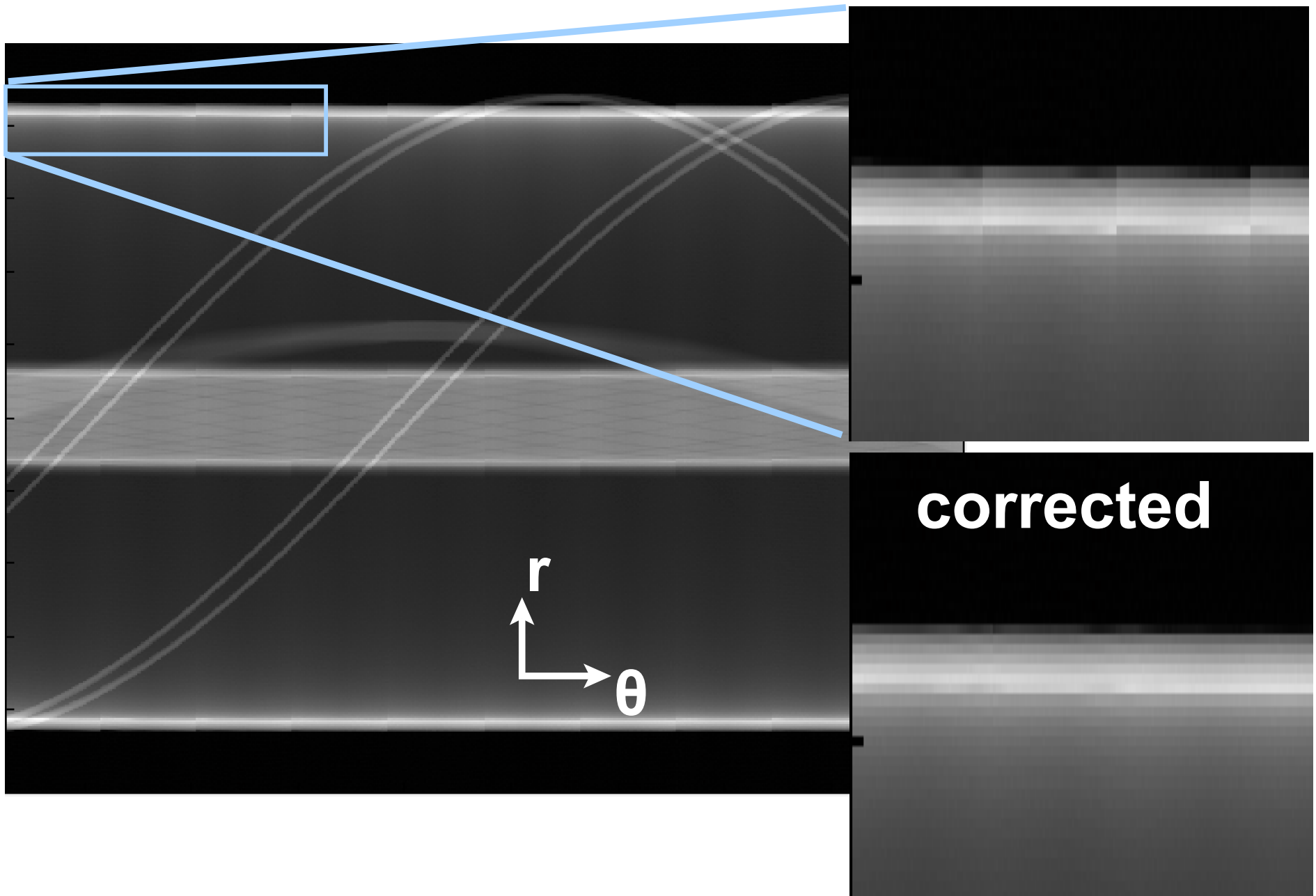
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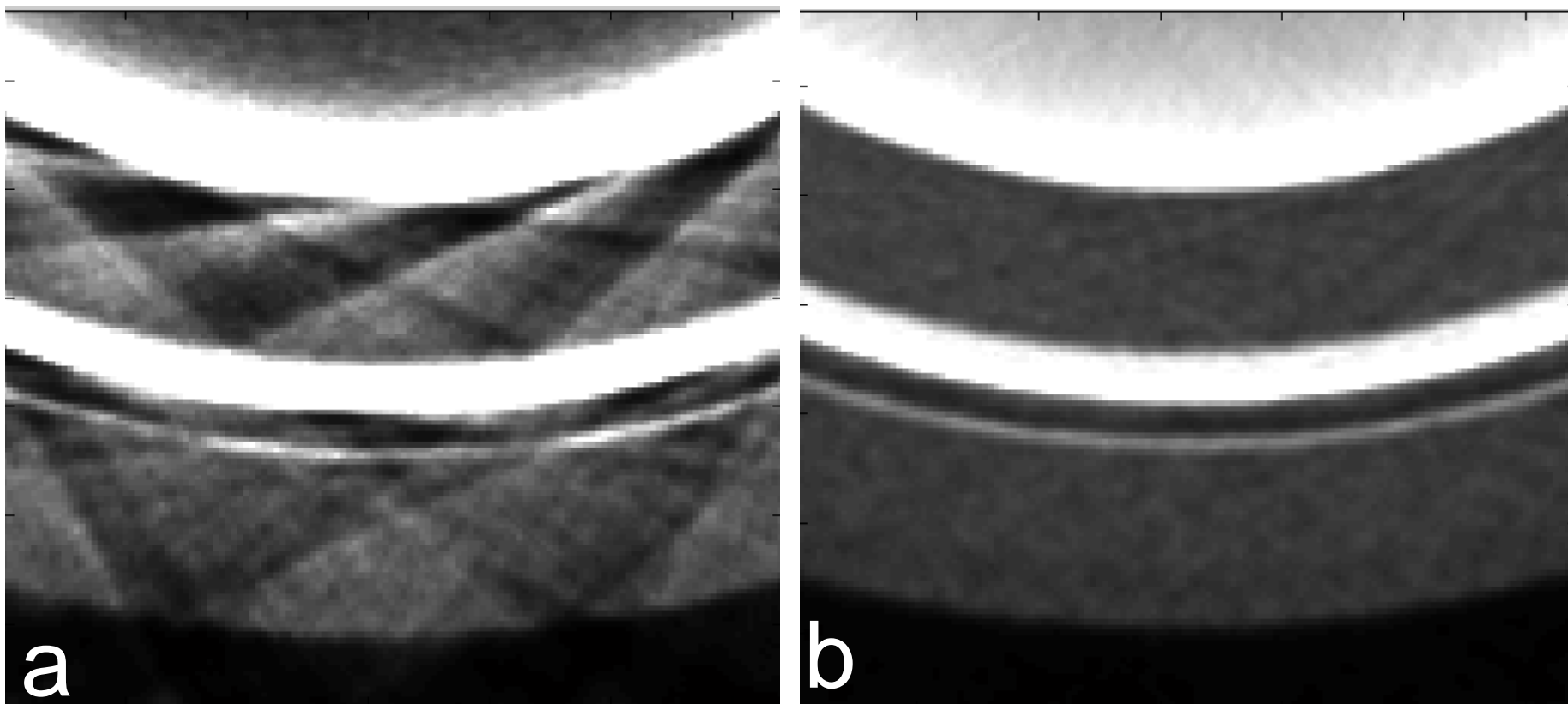
Traverse mismatch correction



corrected

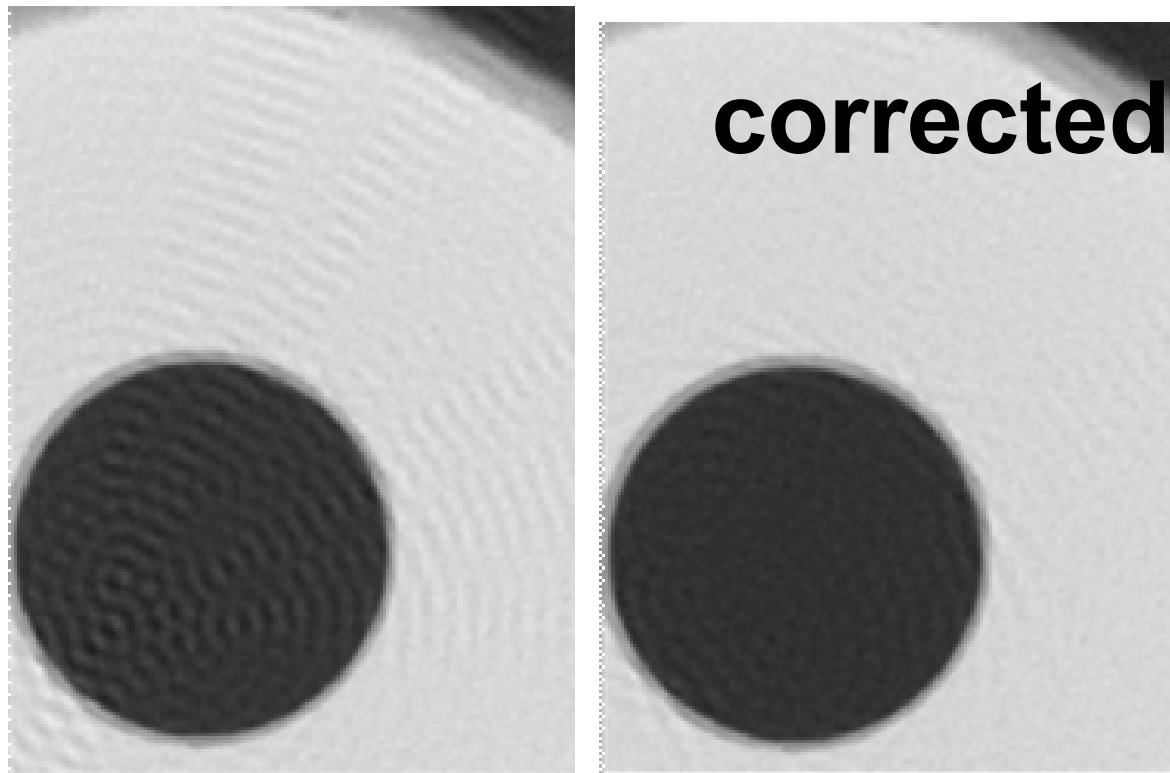
Traverse mismatch in the sinogram

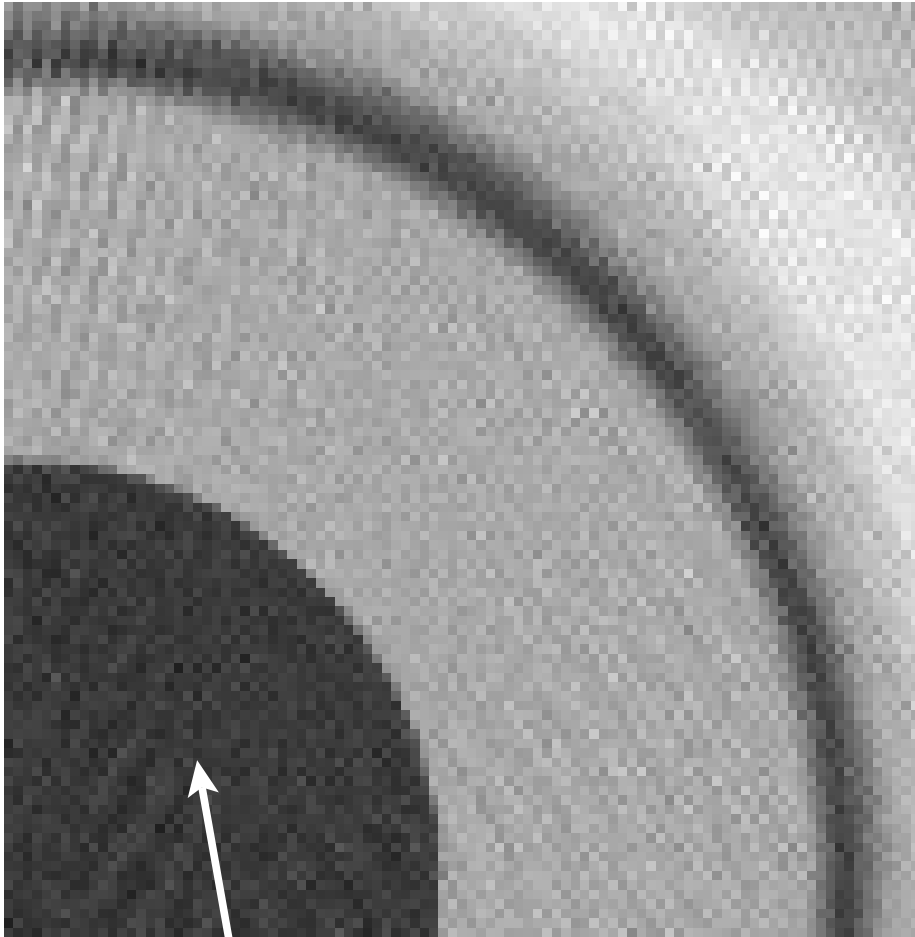




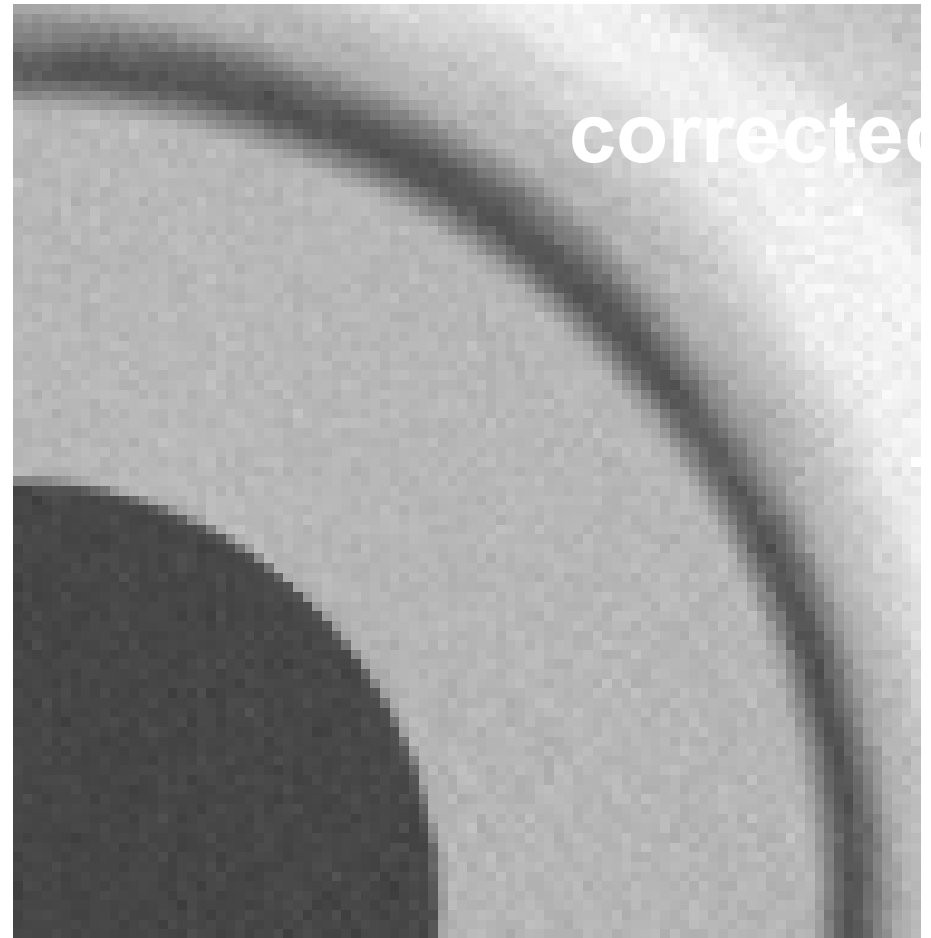
Example of the data corrections, using a small ROI of an aerospace component. (a) The artifactual streaks are due to high-Z and beam hardening. (b) Image resulting from the corrections. Other data corrections have similar remarkable impact on image fidelity.

Railroad track correction



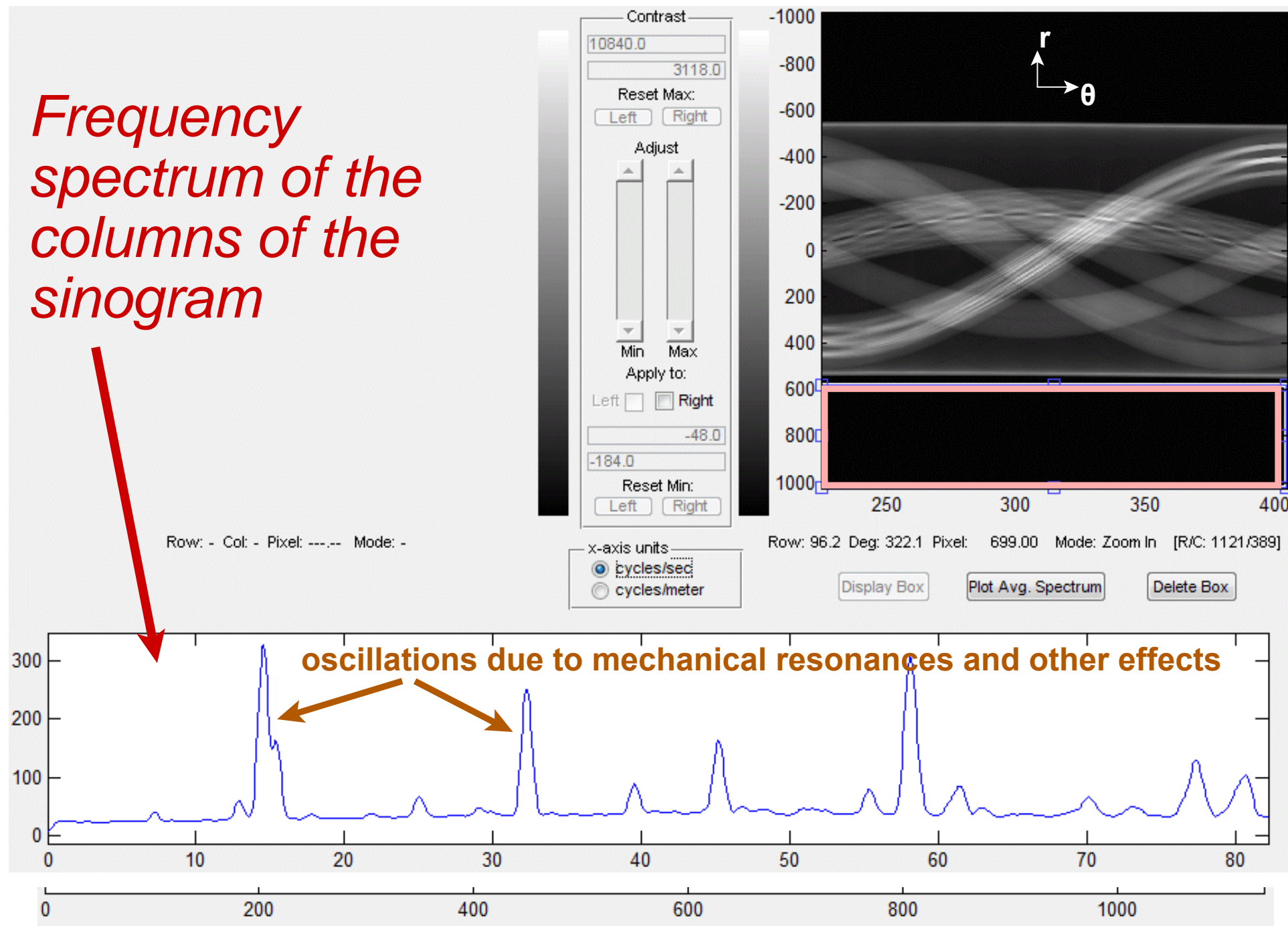


railroad track

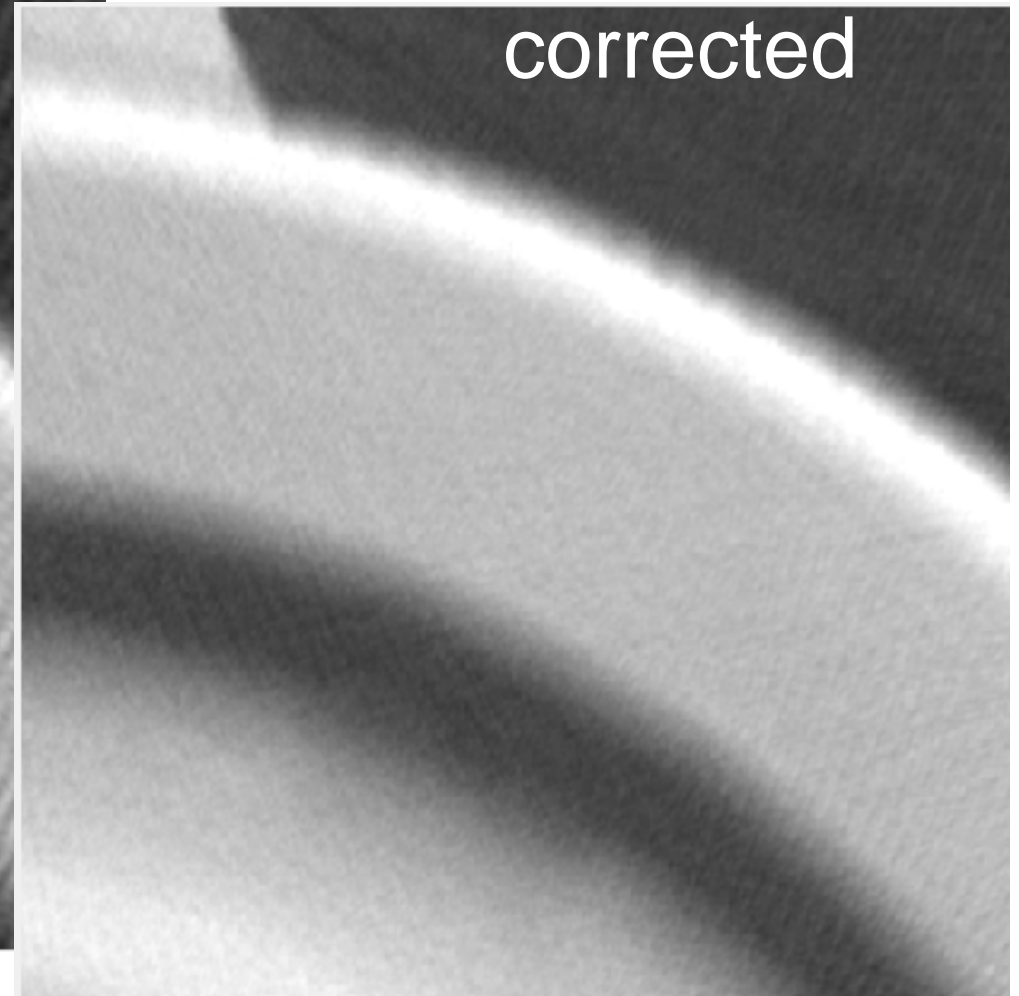
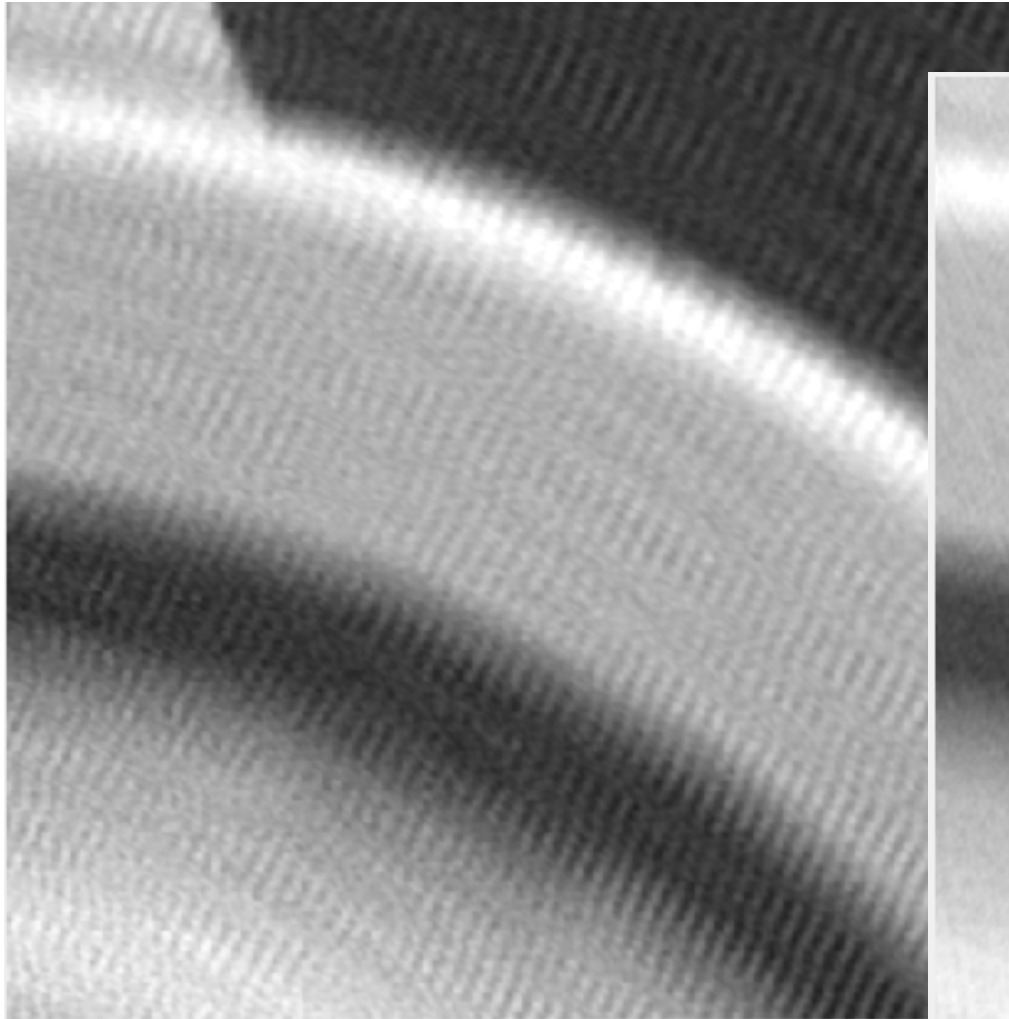


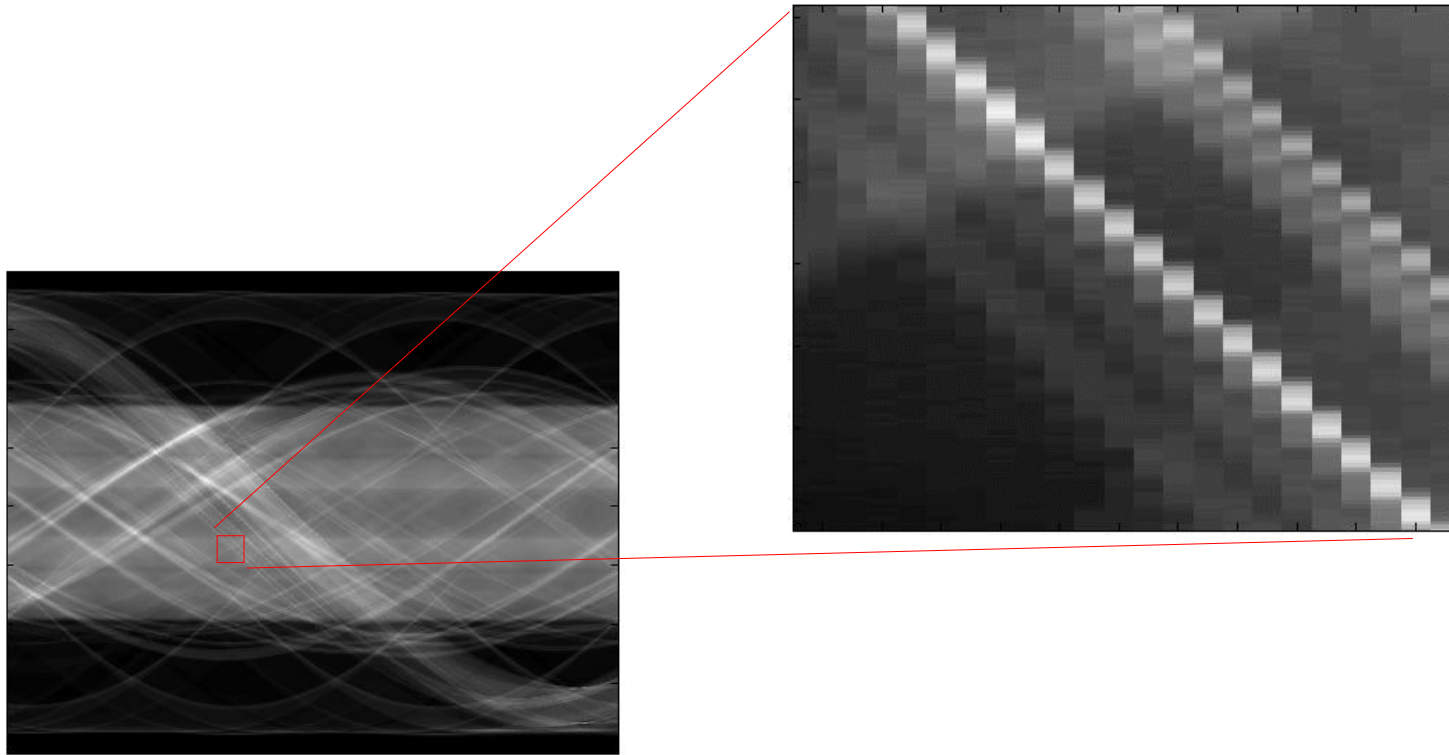
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Frequency spectrum of the columns of the sinogram

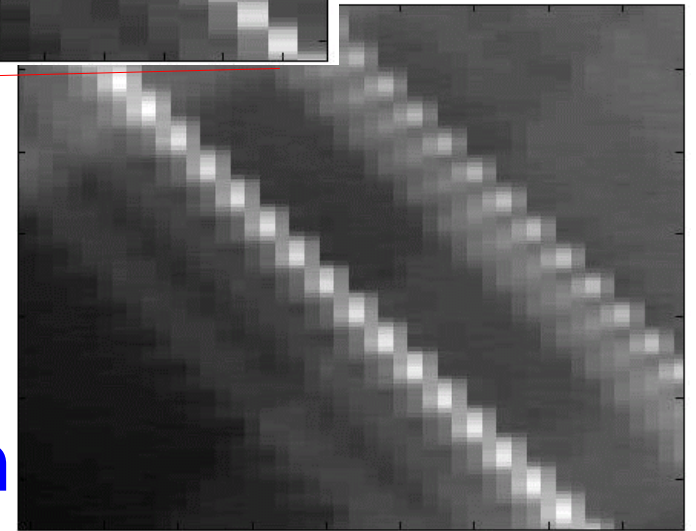
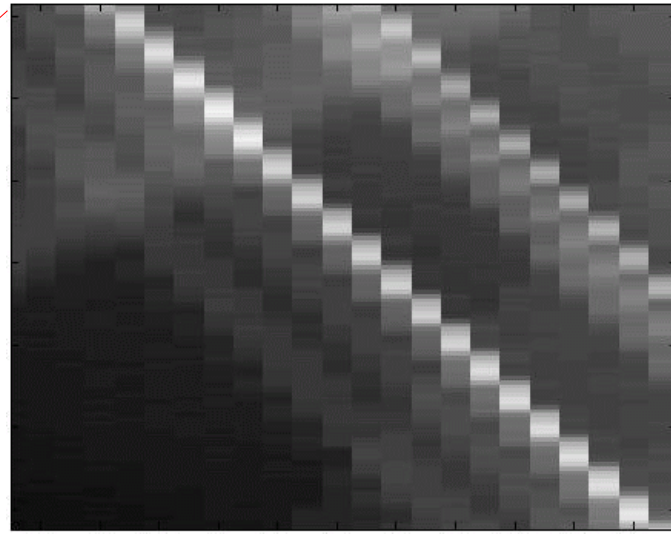
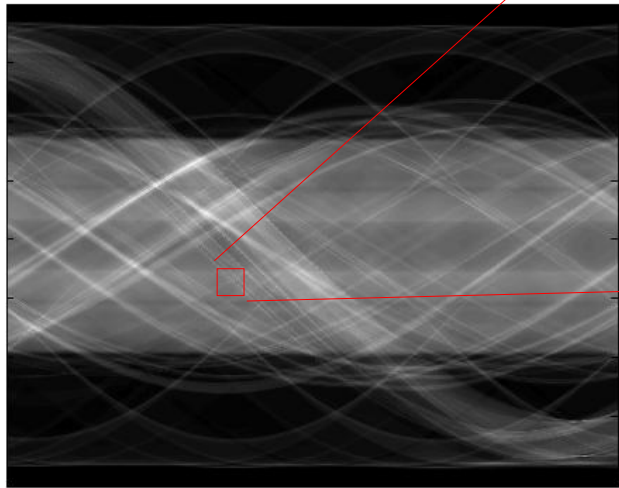


Aliasing



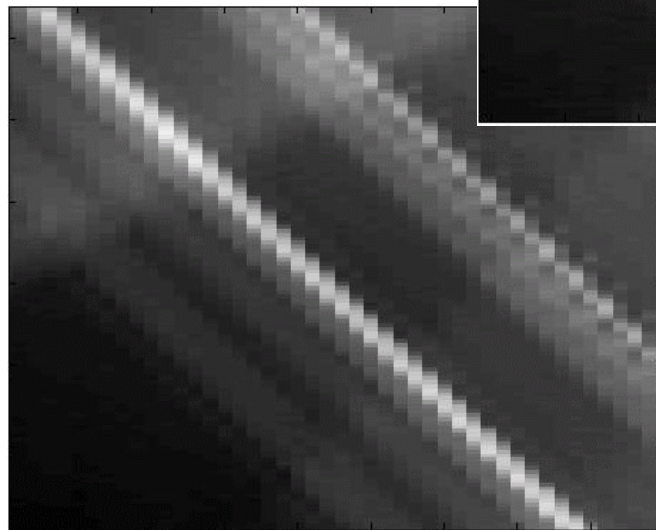
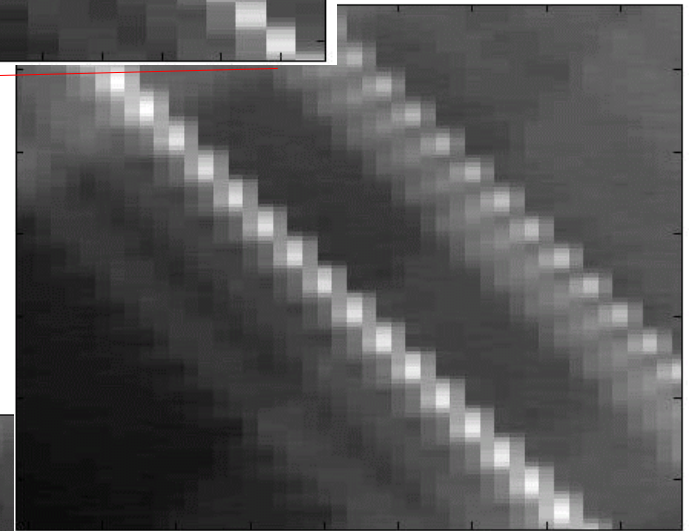
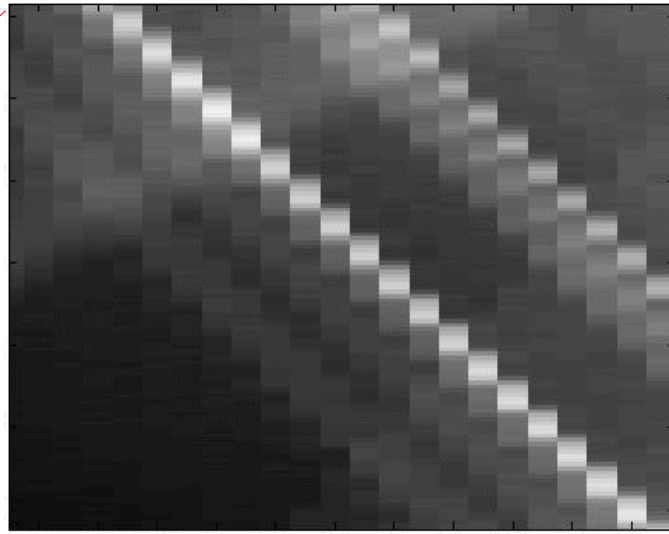
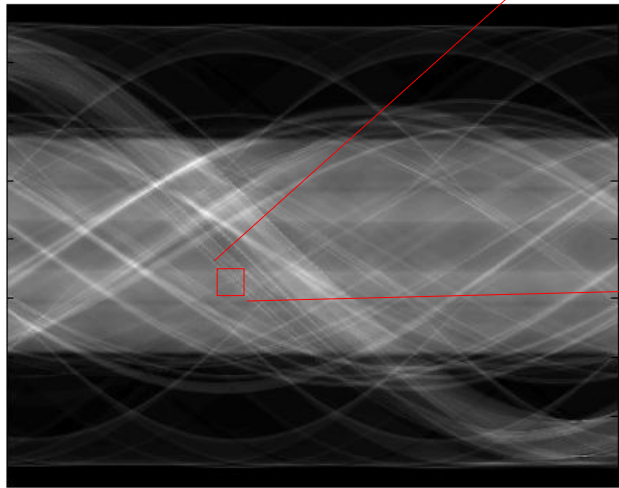


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better -

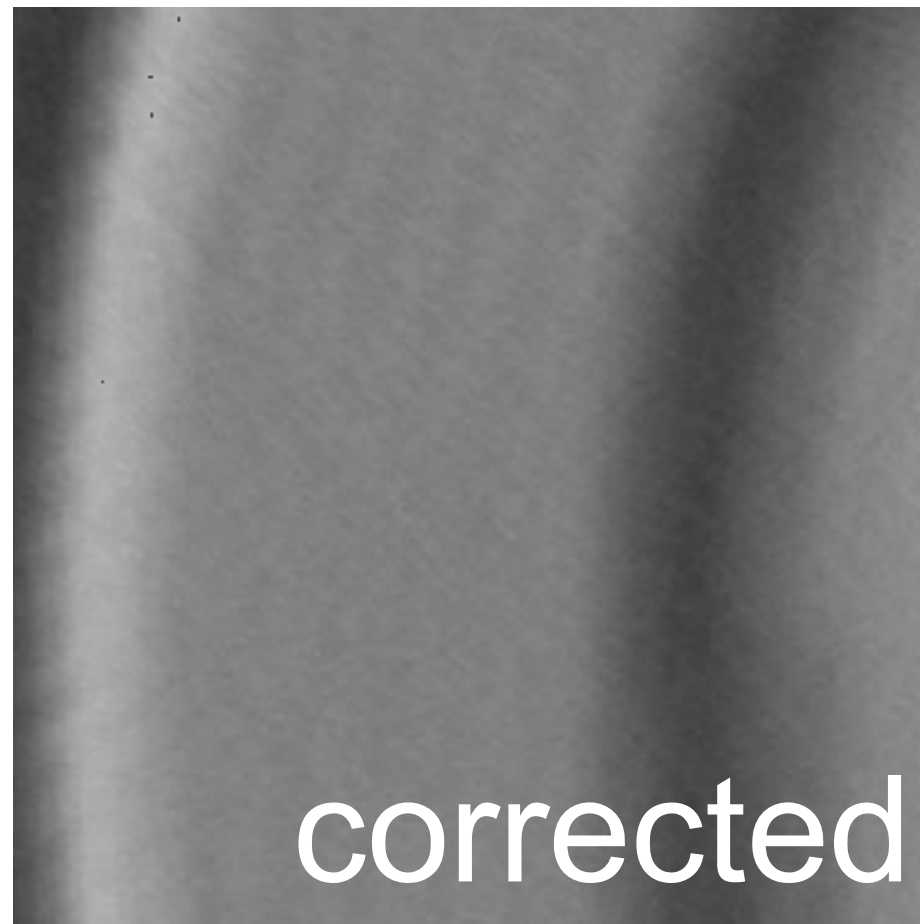
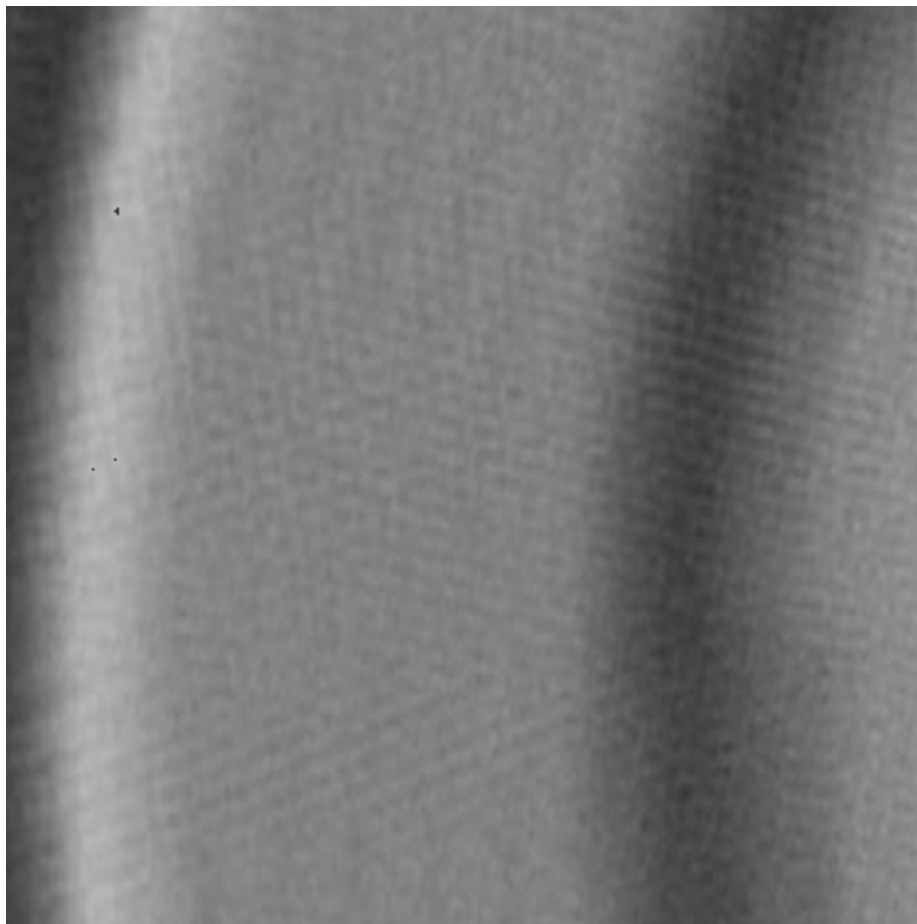
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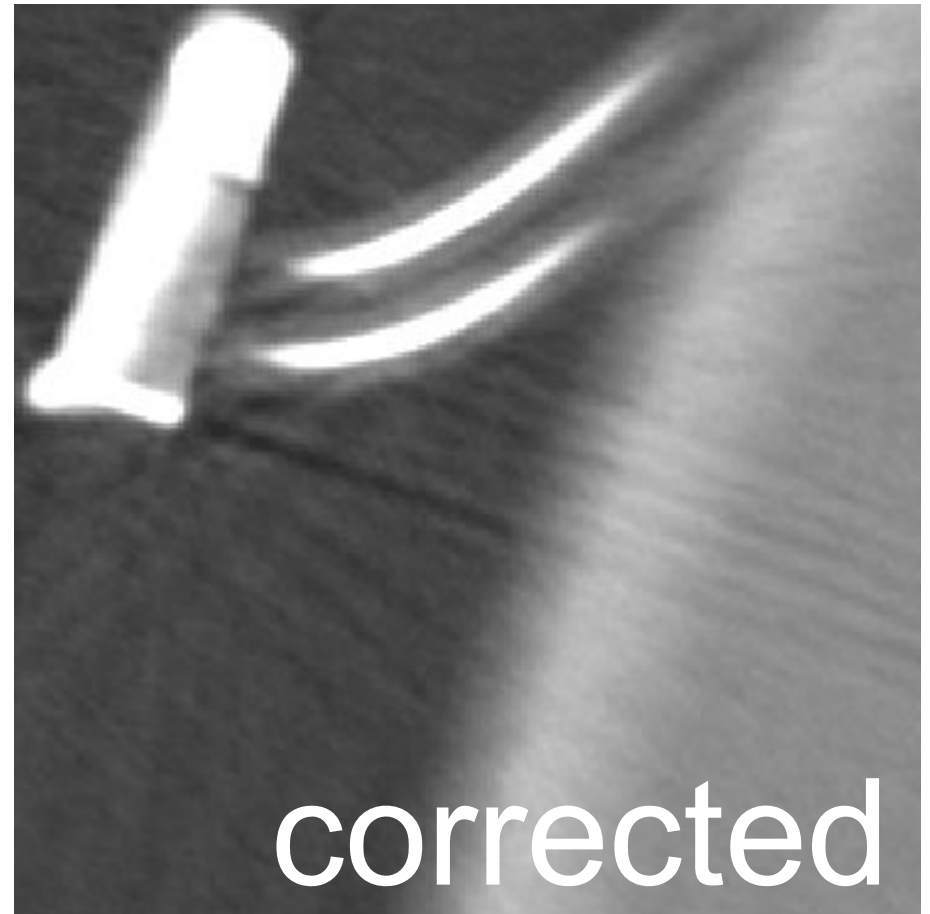
best -

directional
interpolation

Aliasing



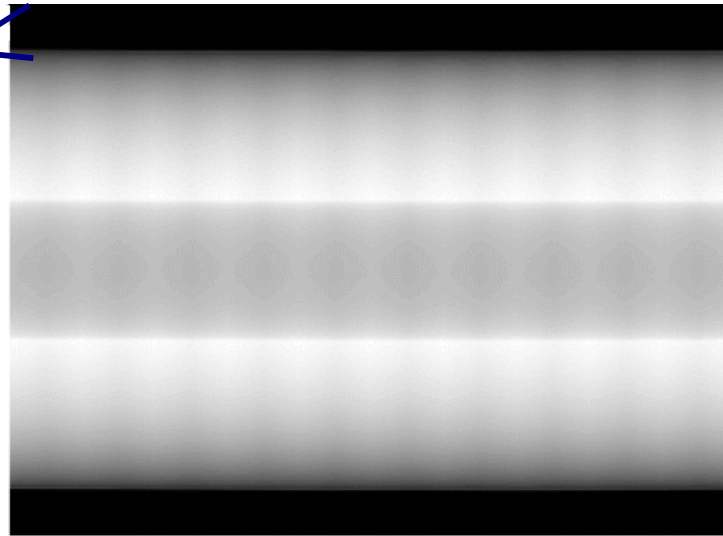
Aliasing



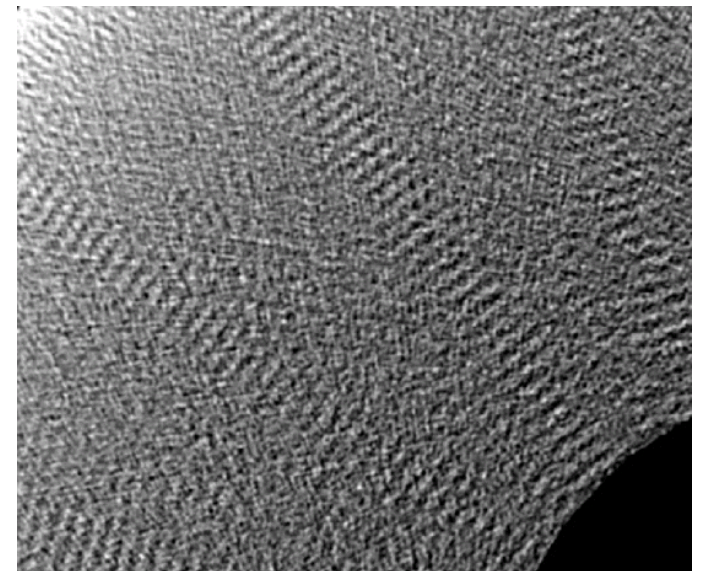
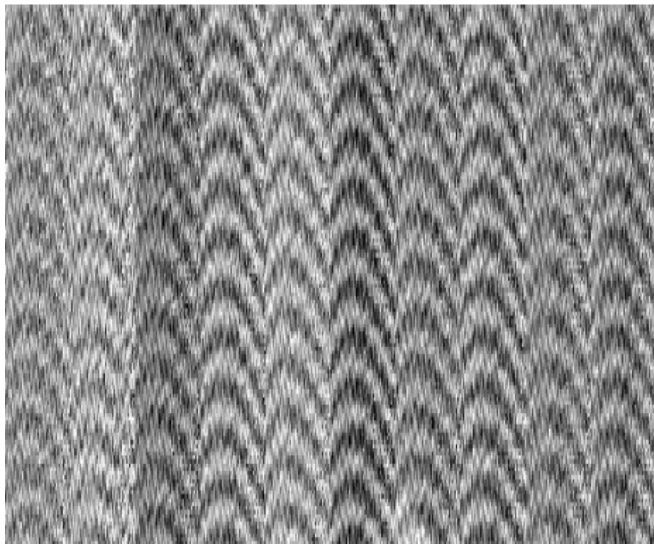
Railroad Track Artifact

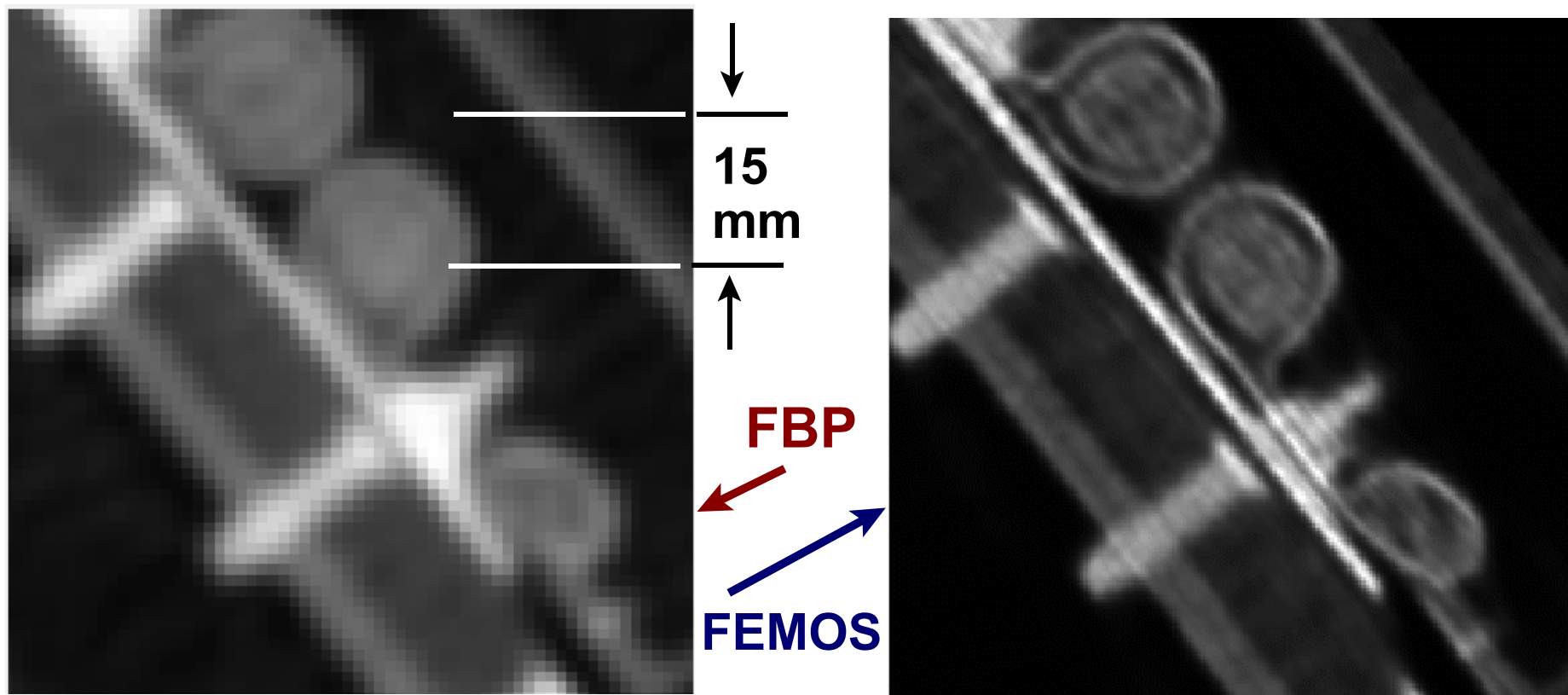
How it affects the sinogram

sinogram

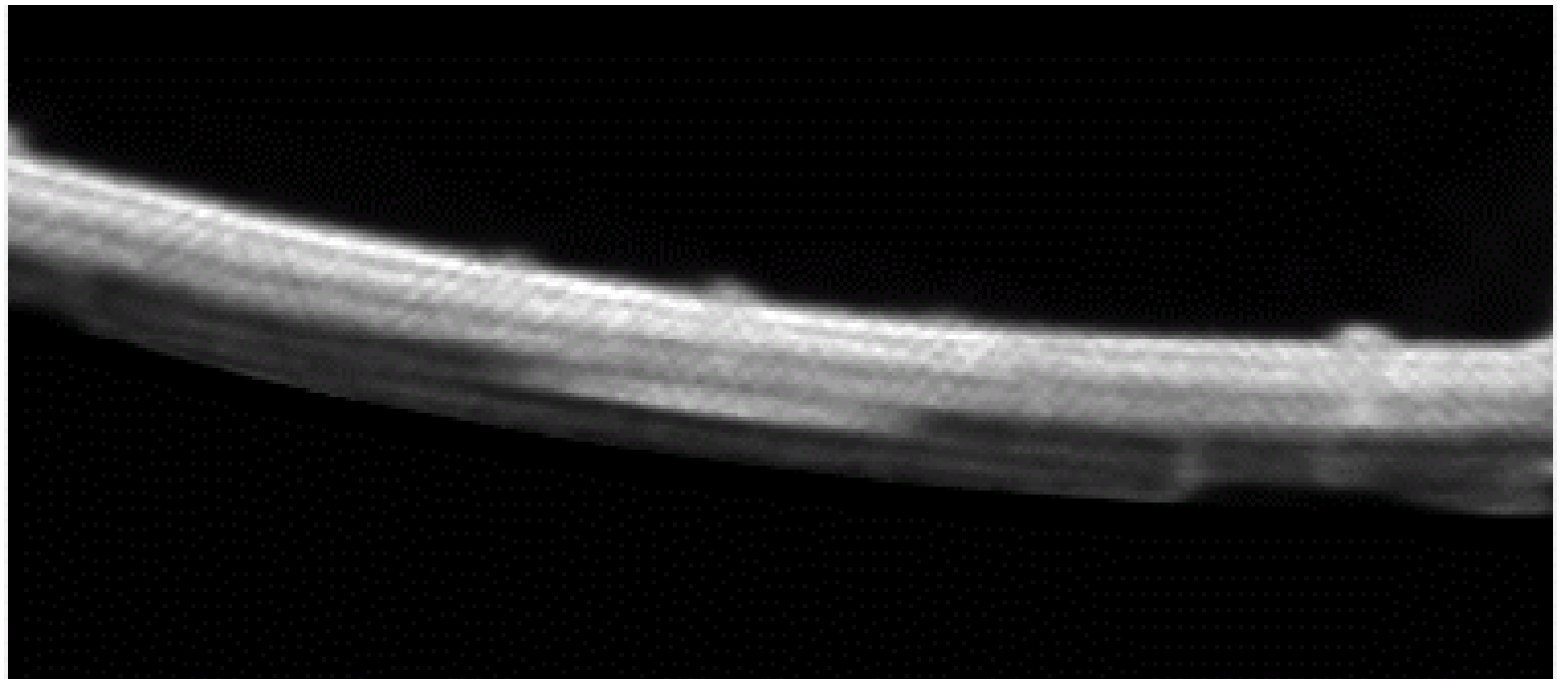
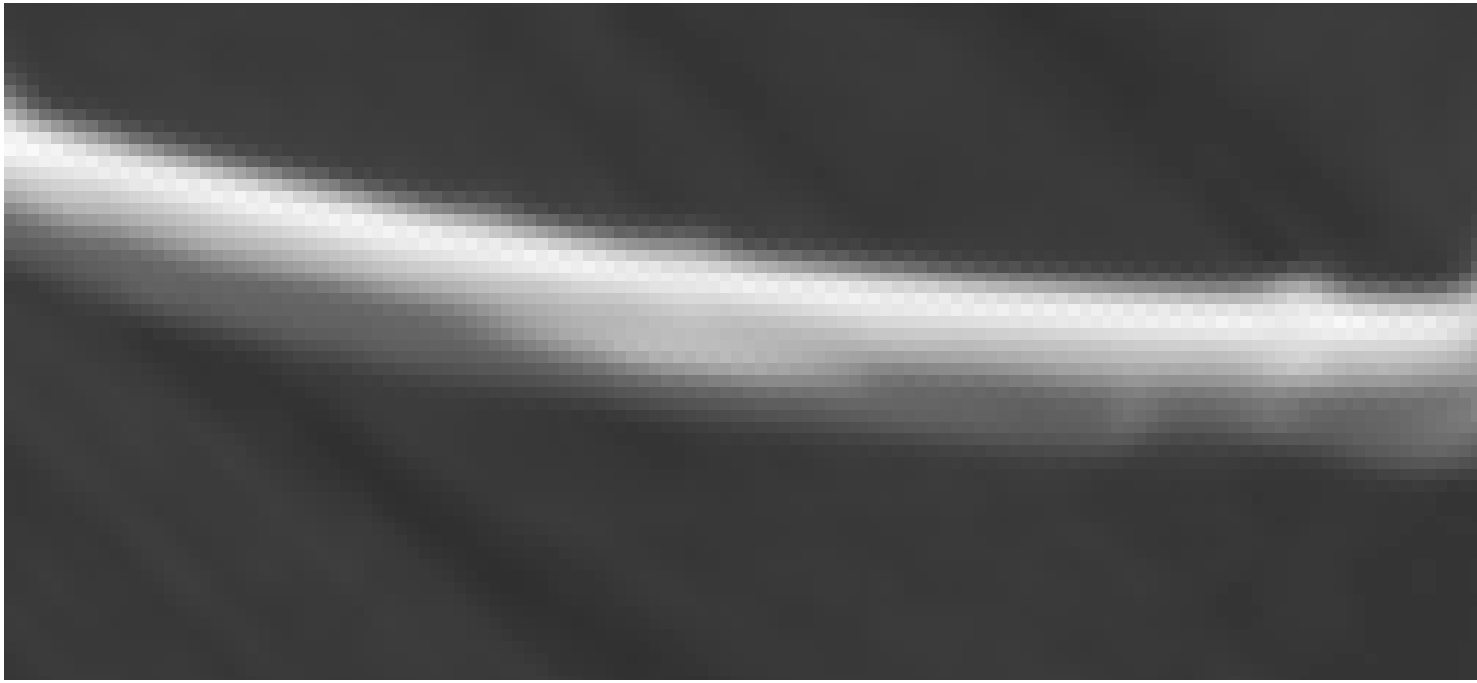


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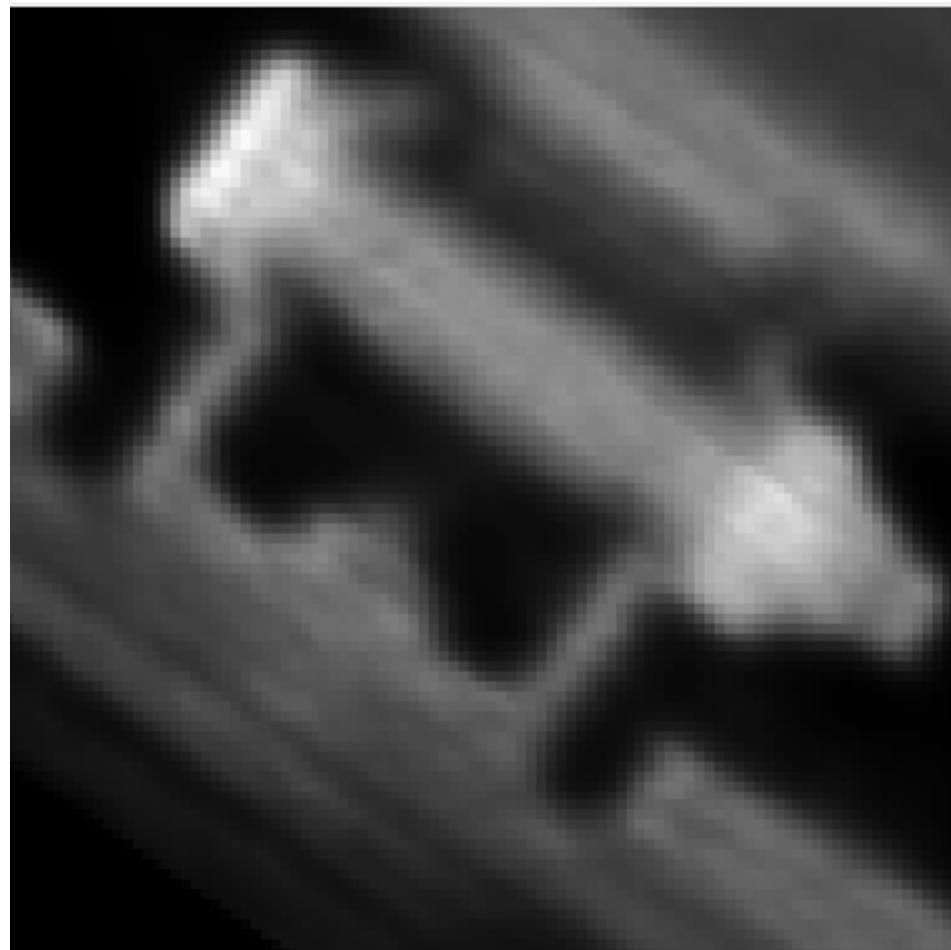
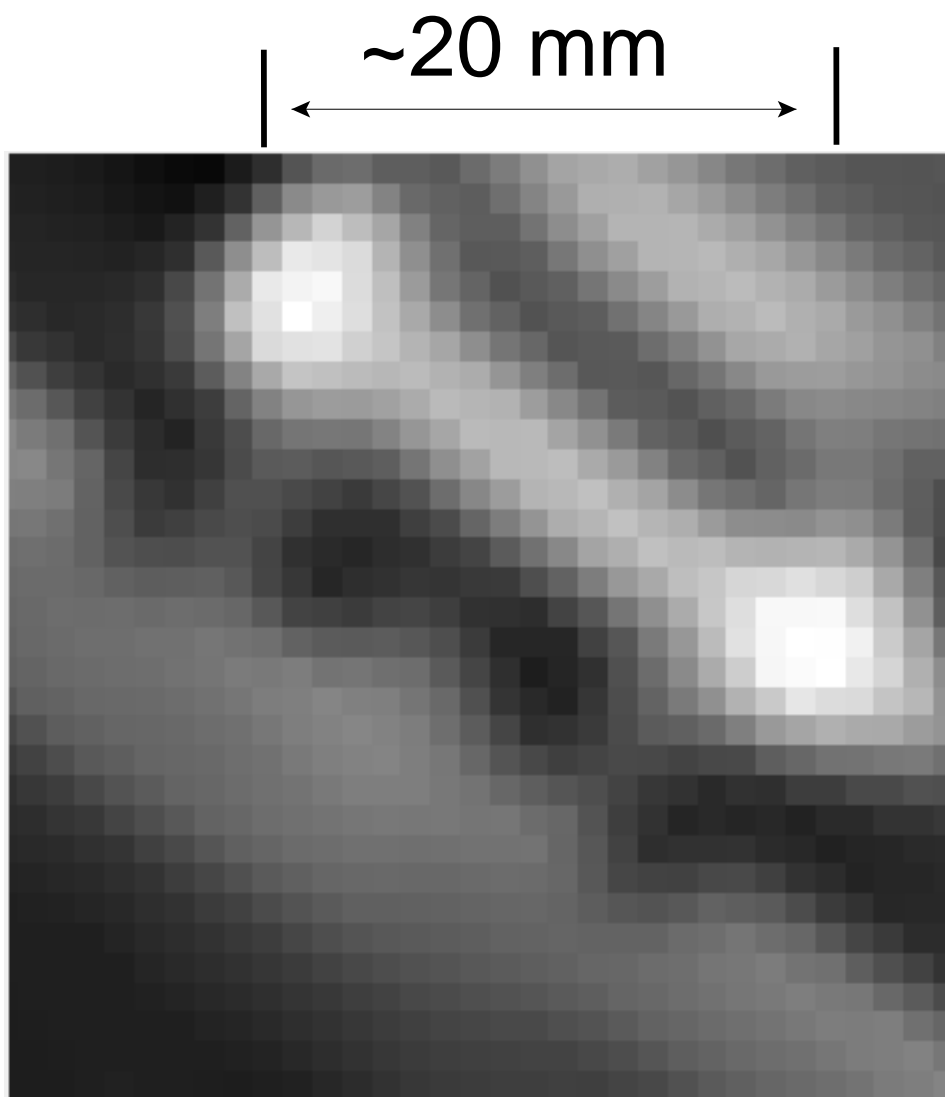


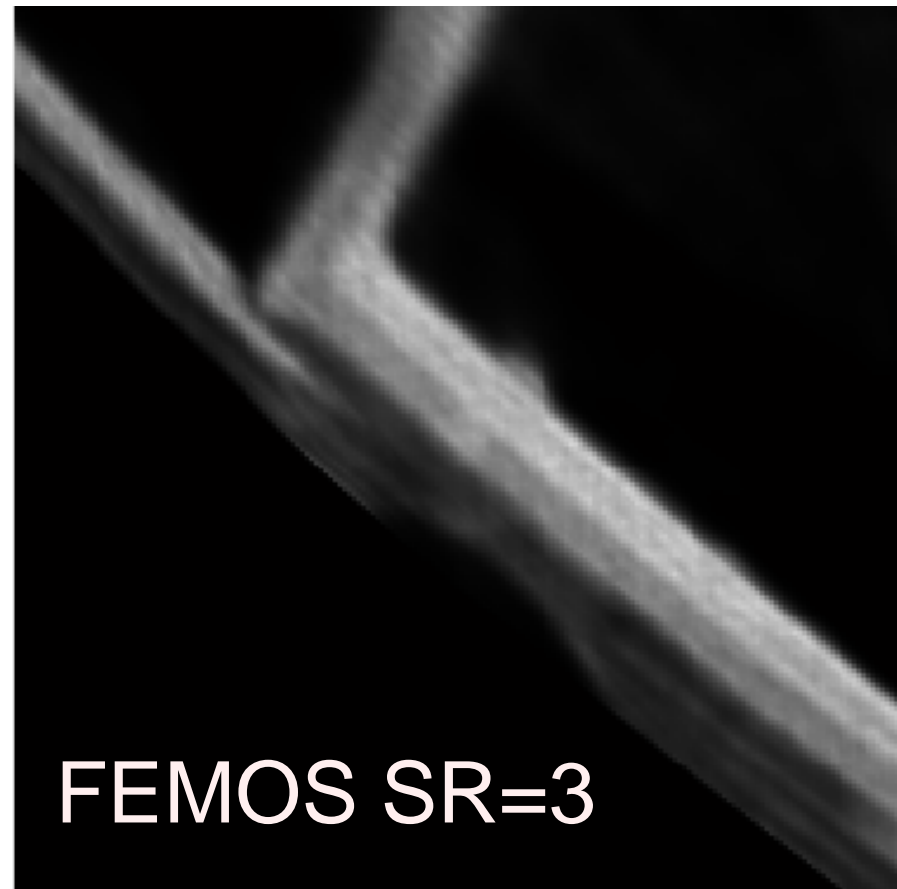
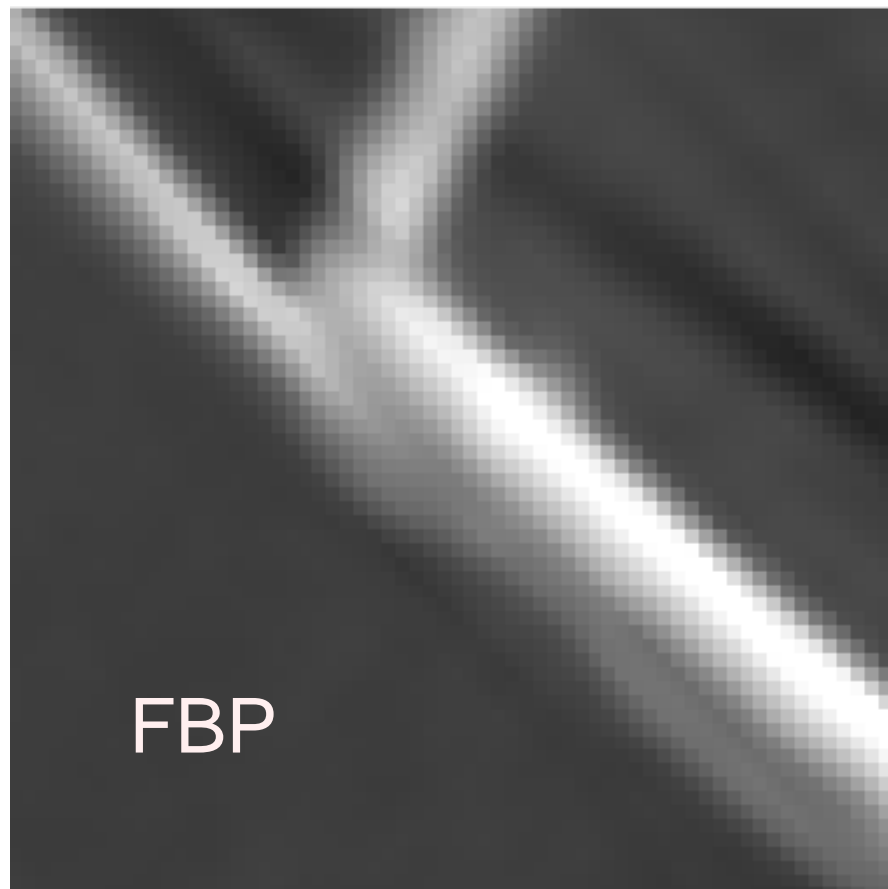


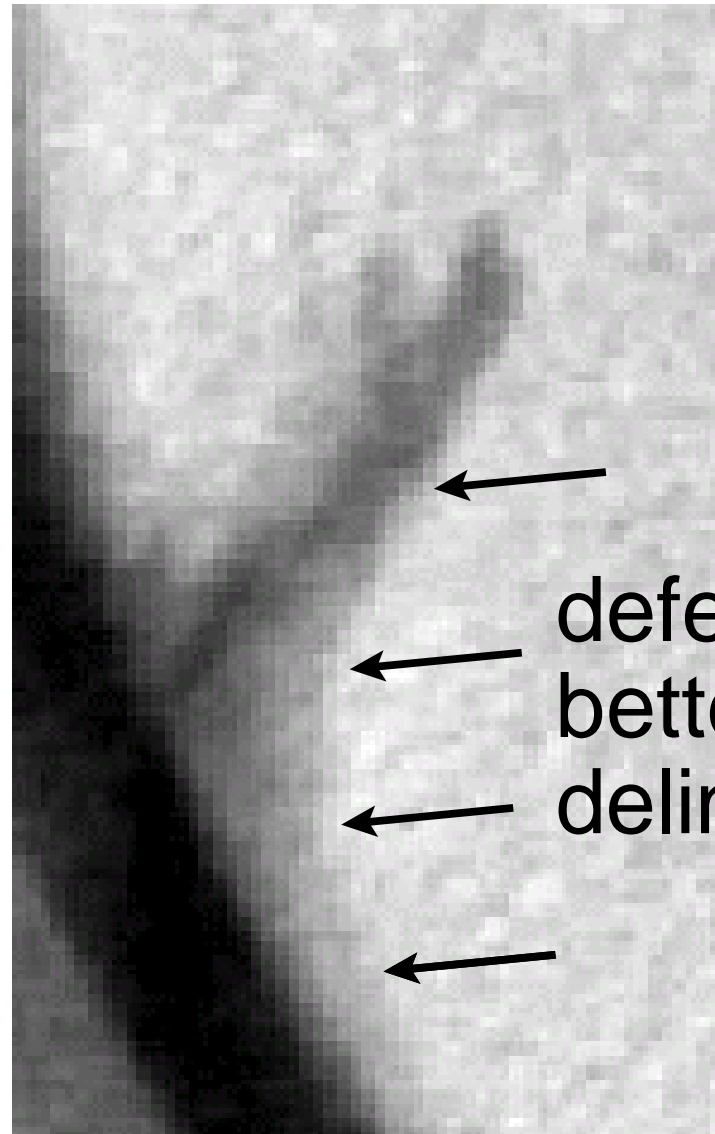
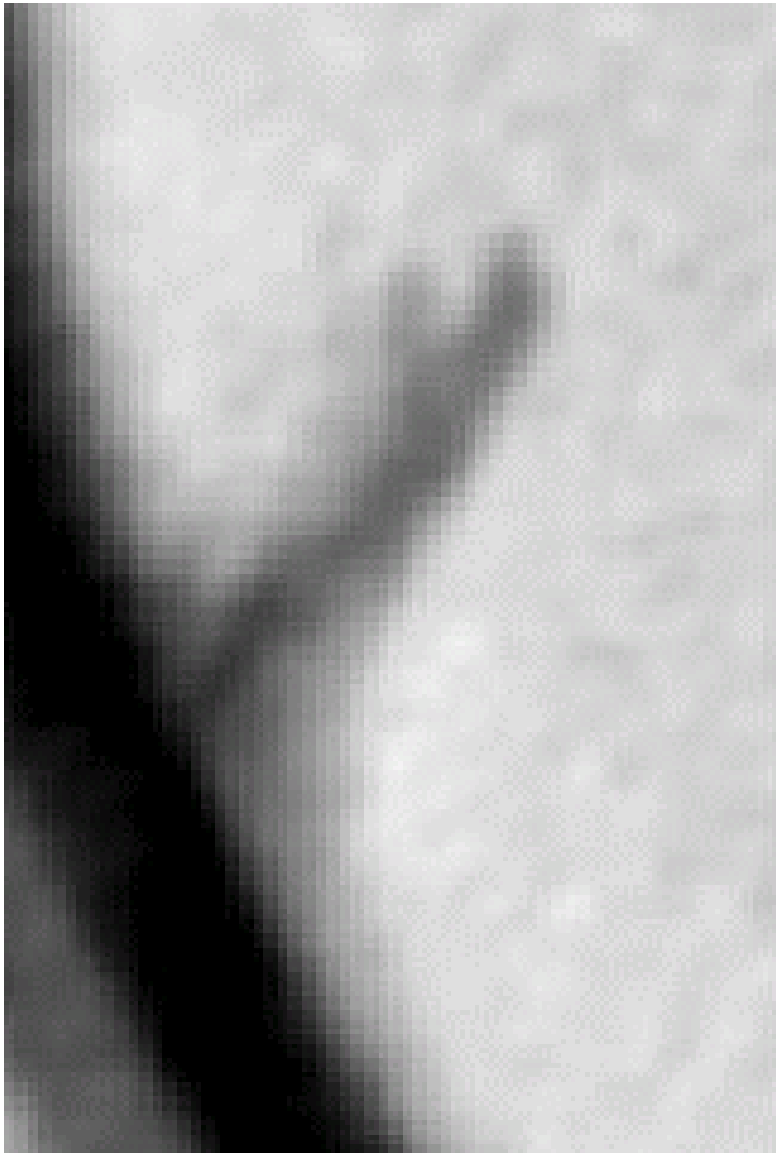
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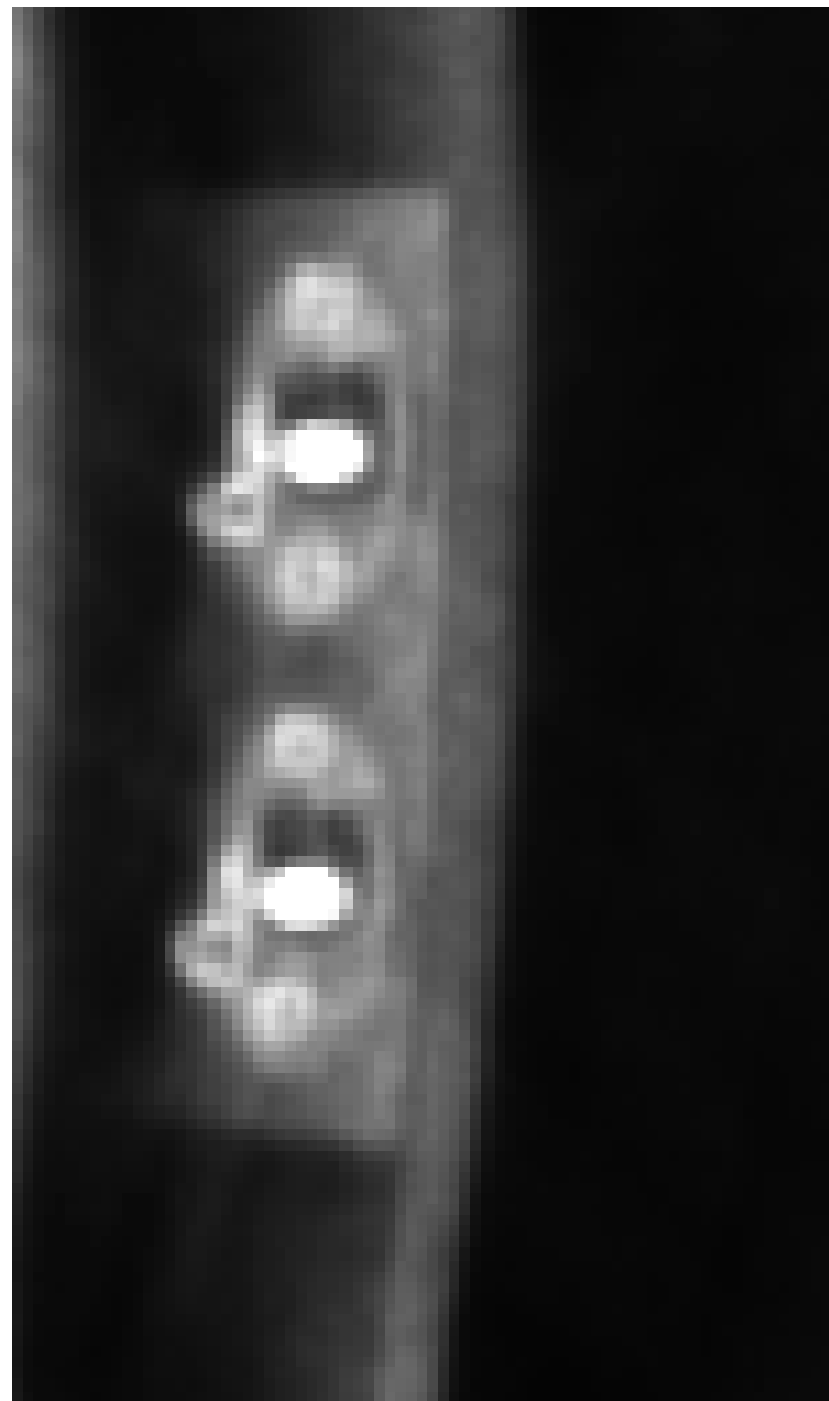
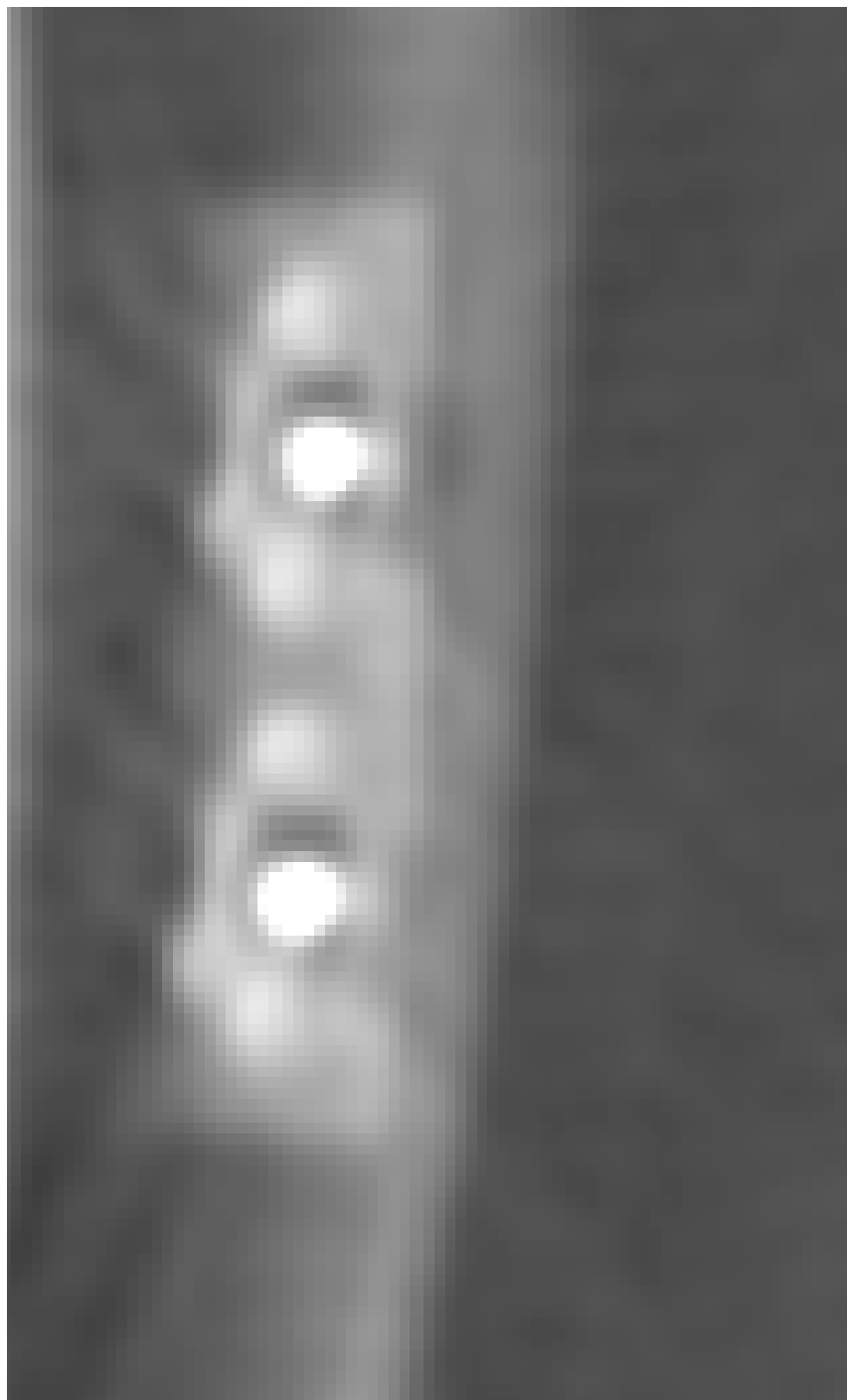
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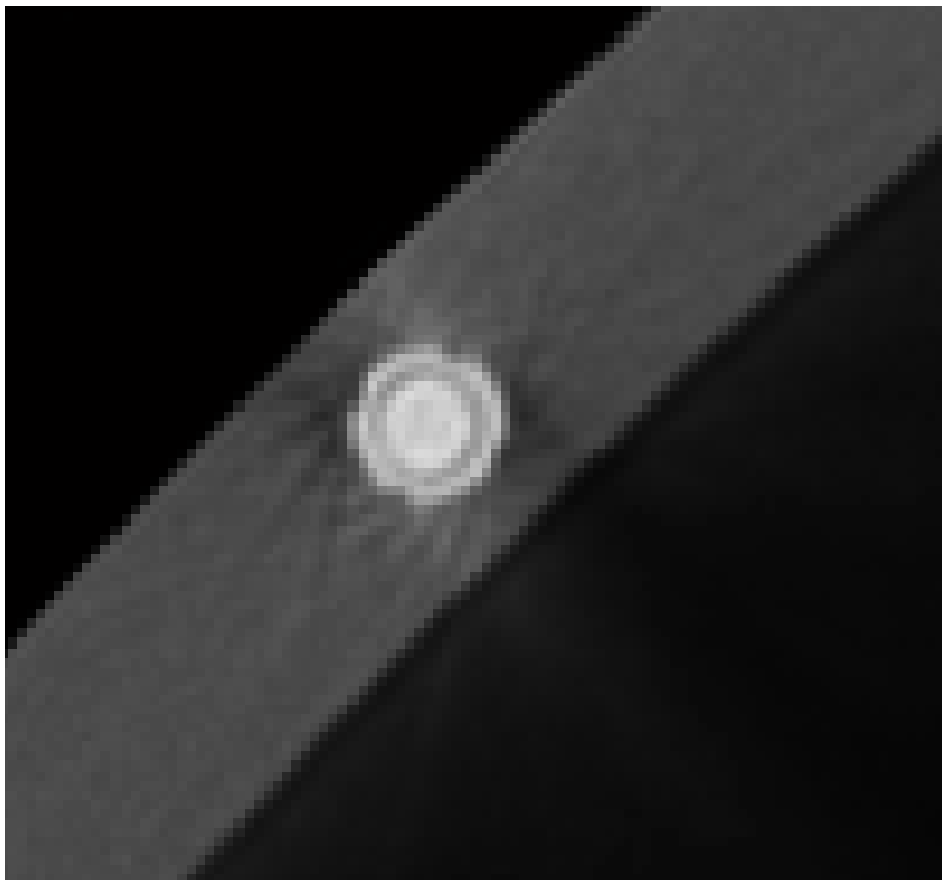
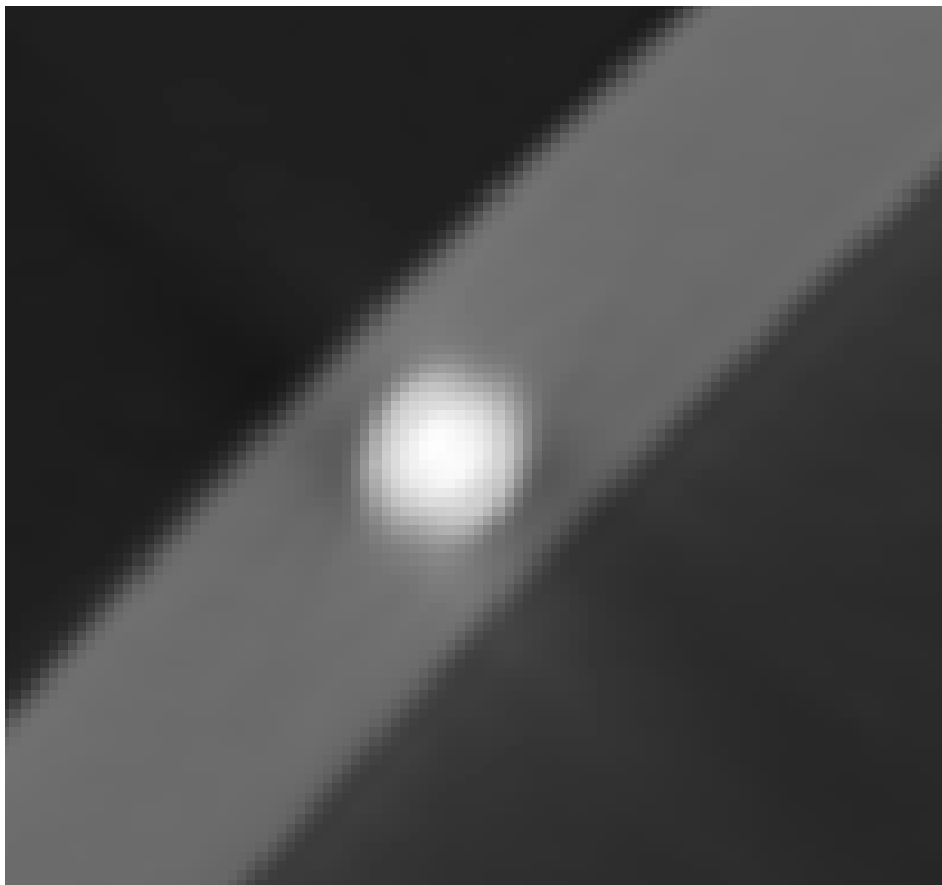




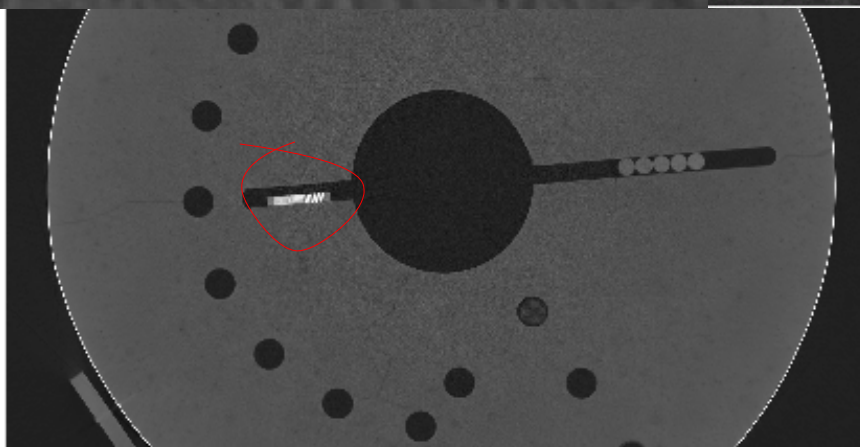
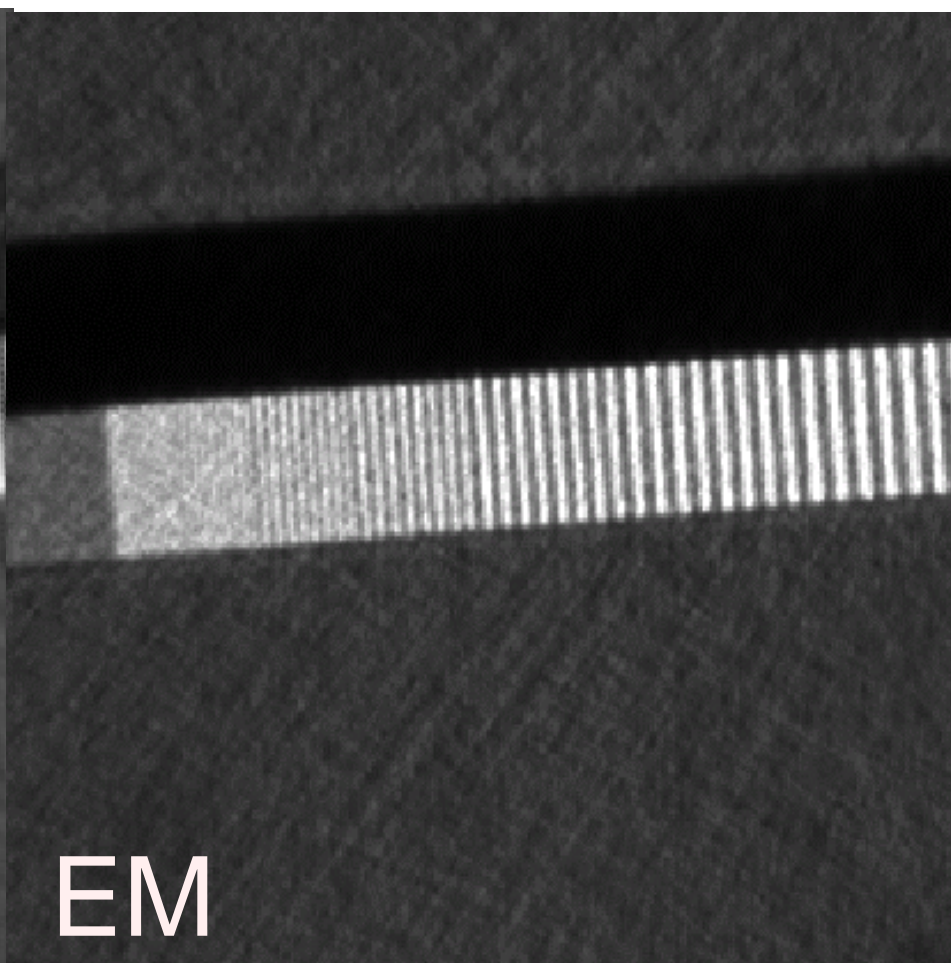
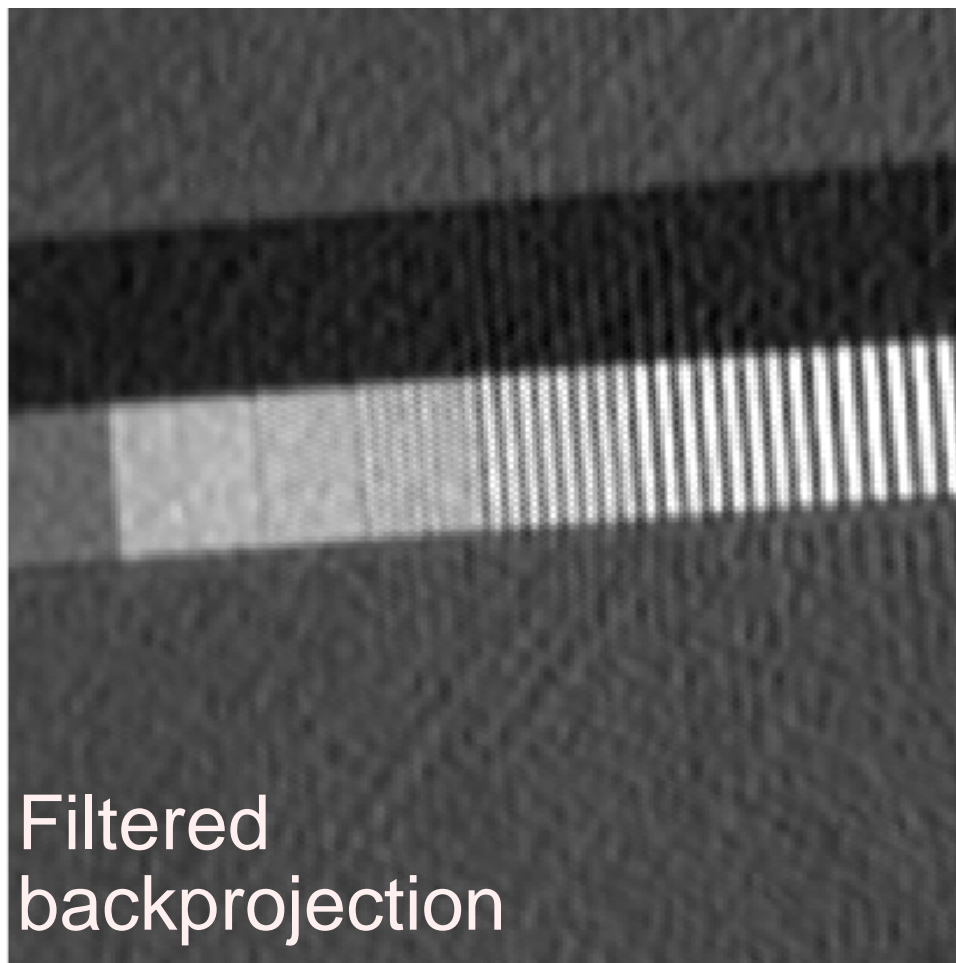
defects
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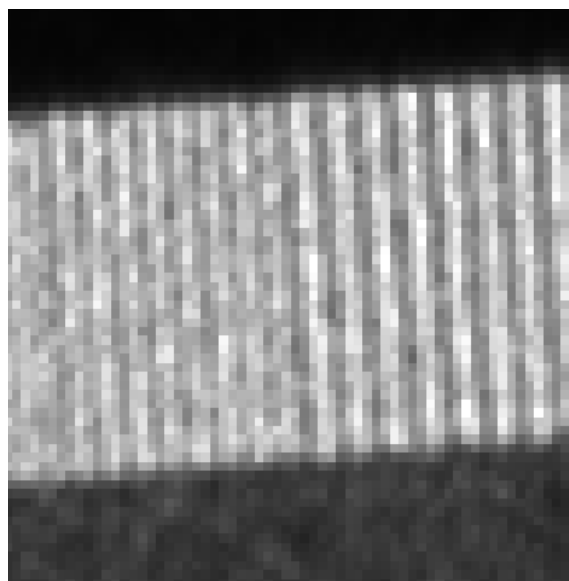
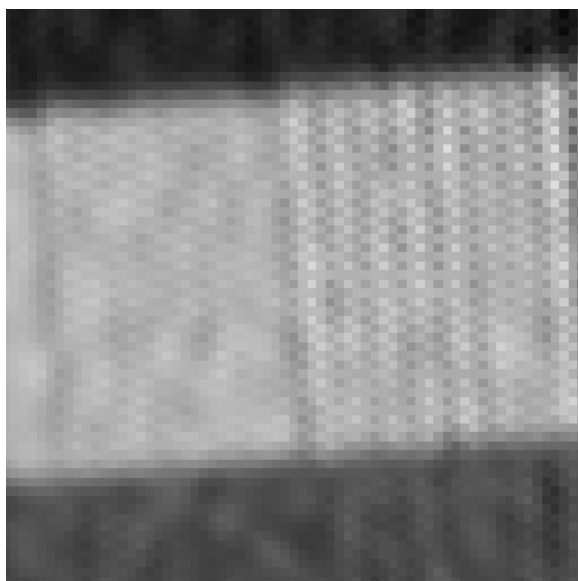
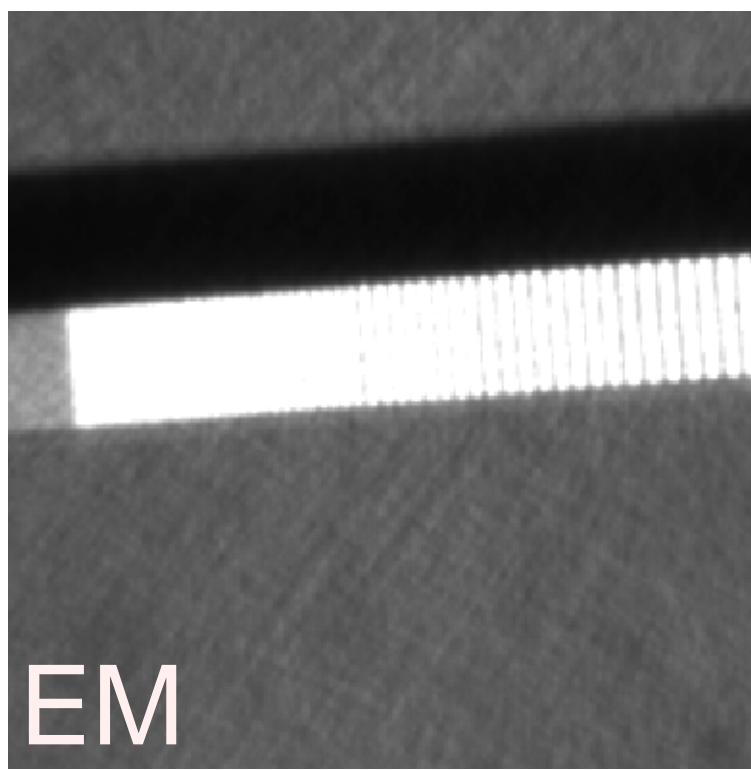
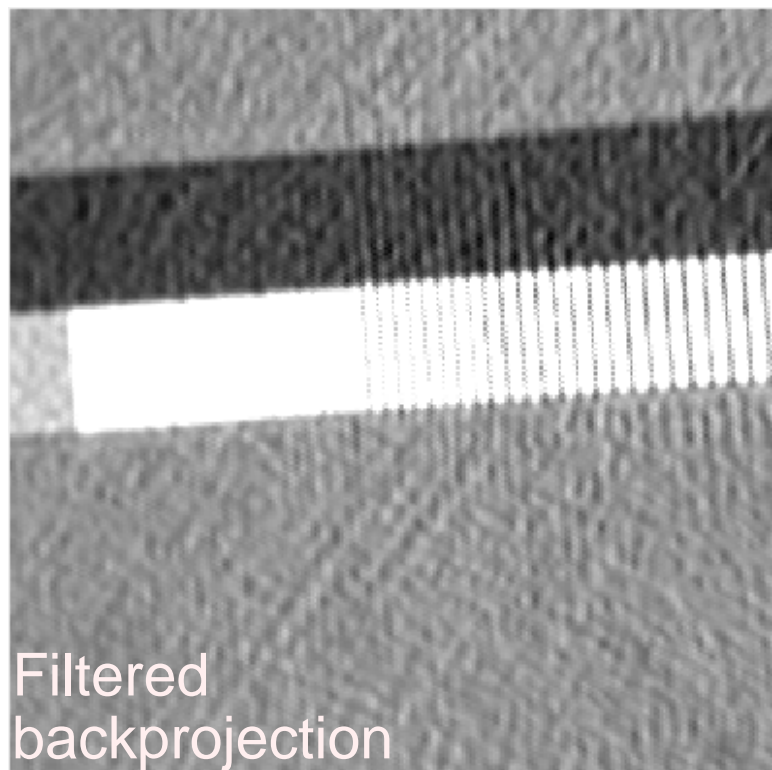


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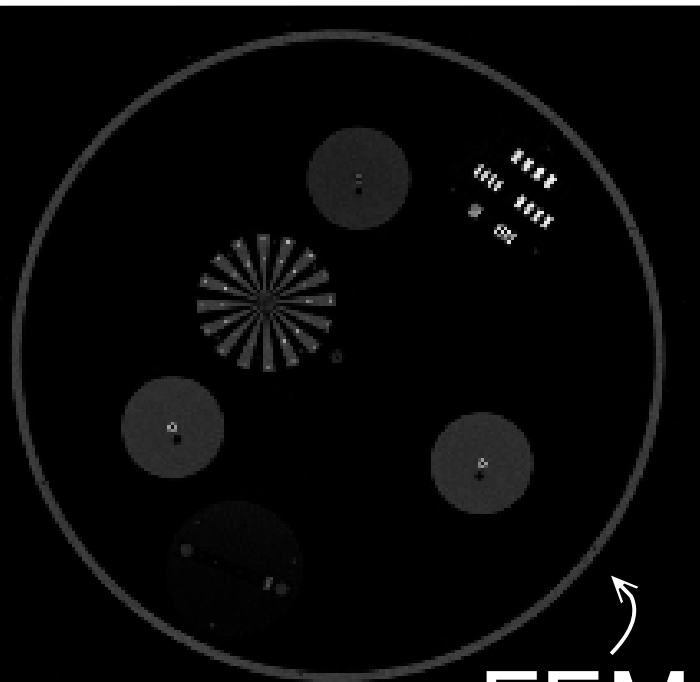
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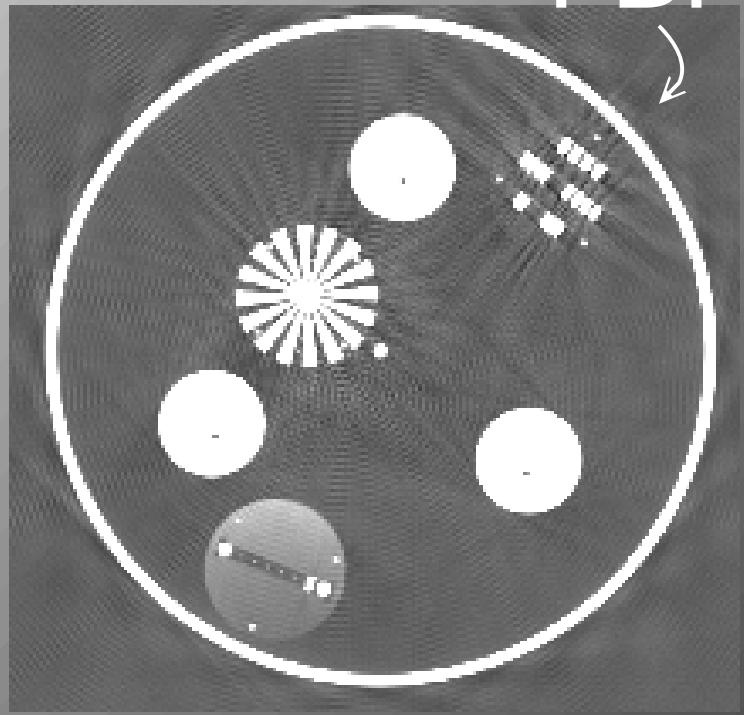




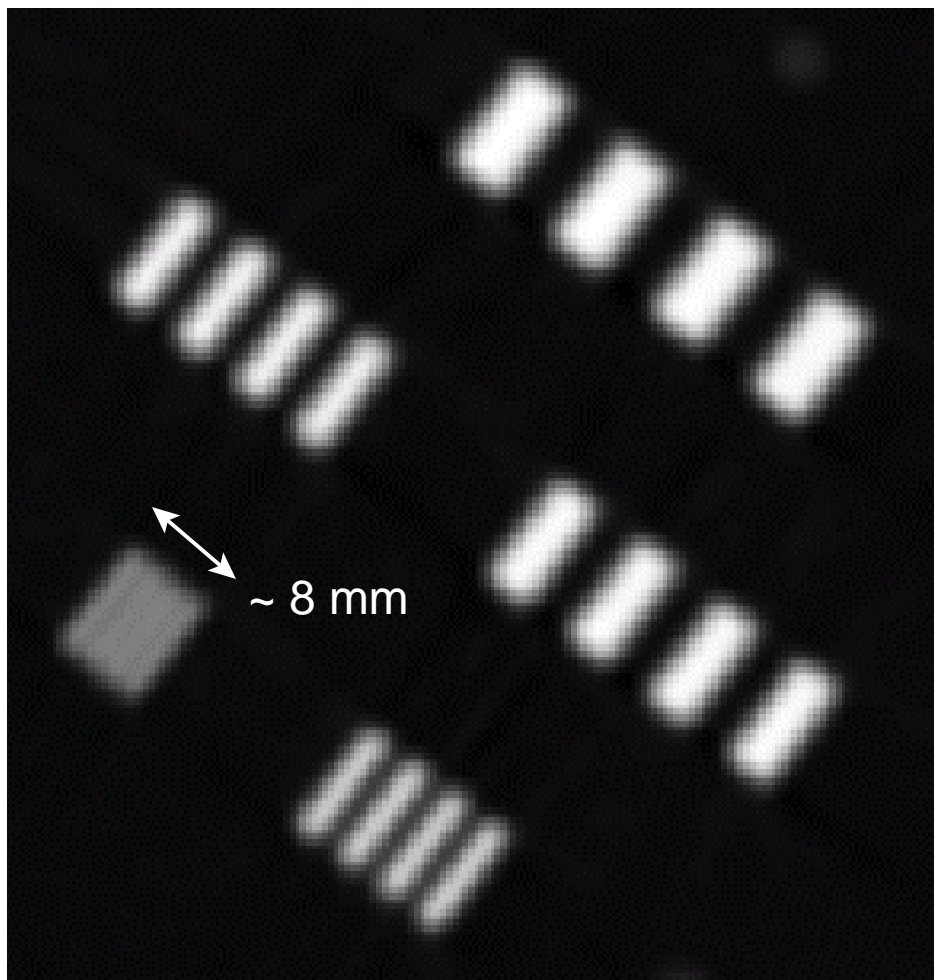
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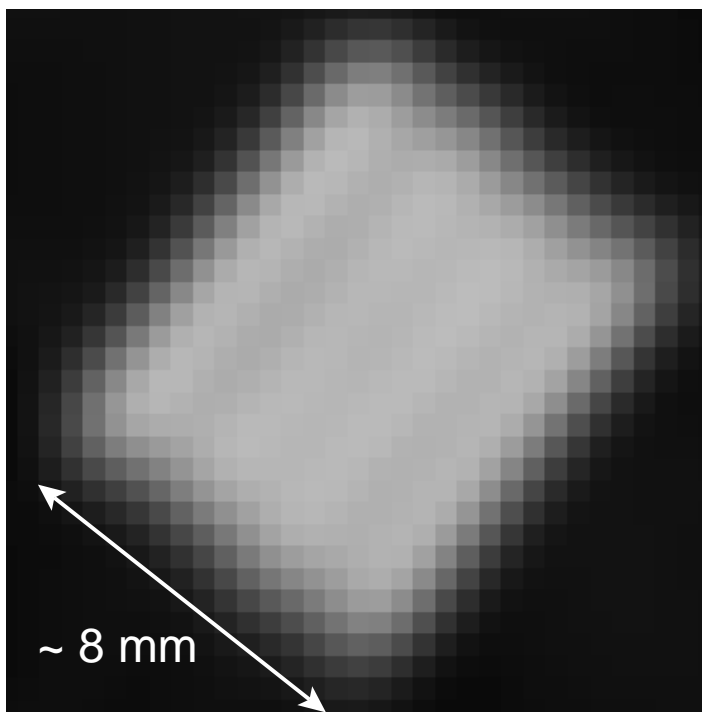
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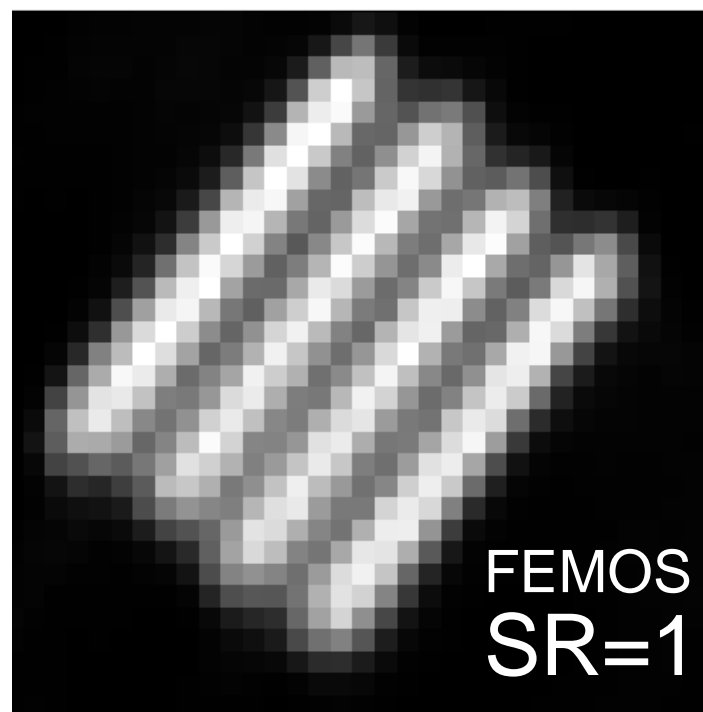
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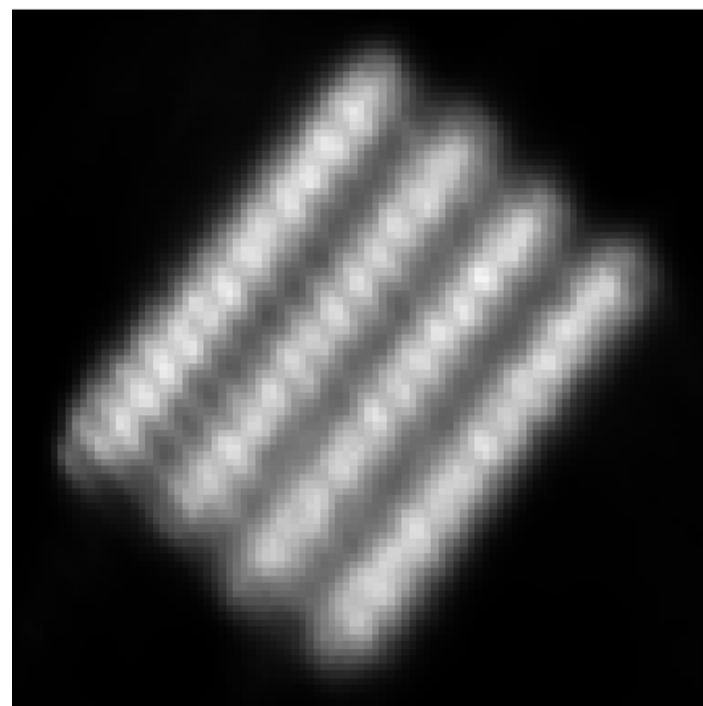




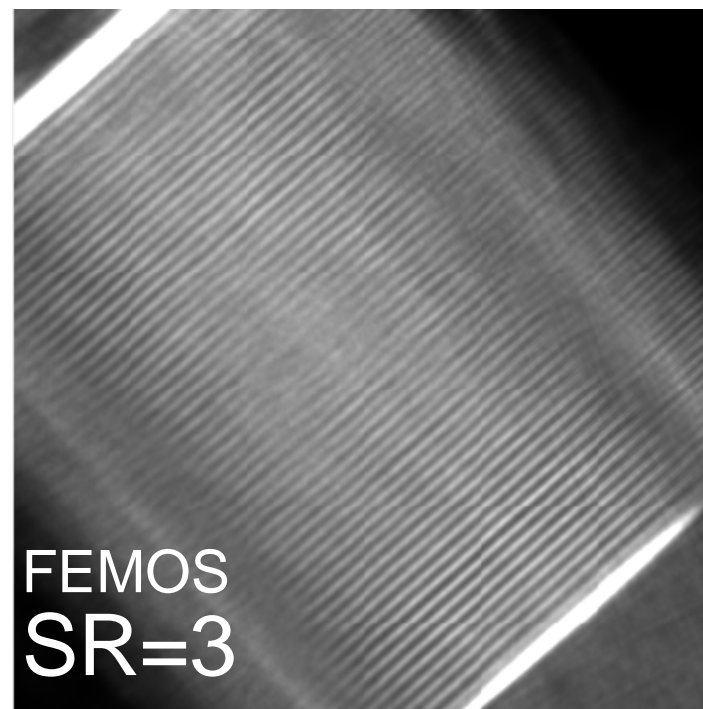
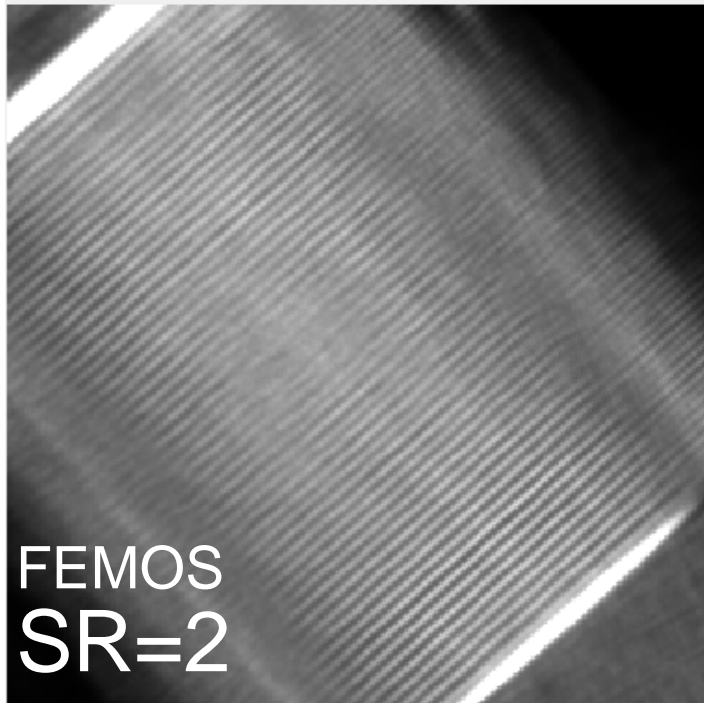
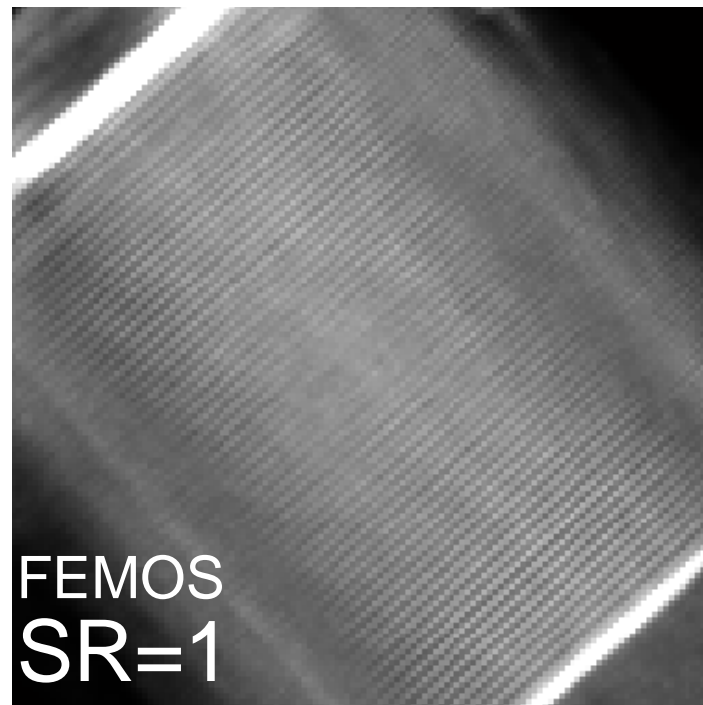
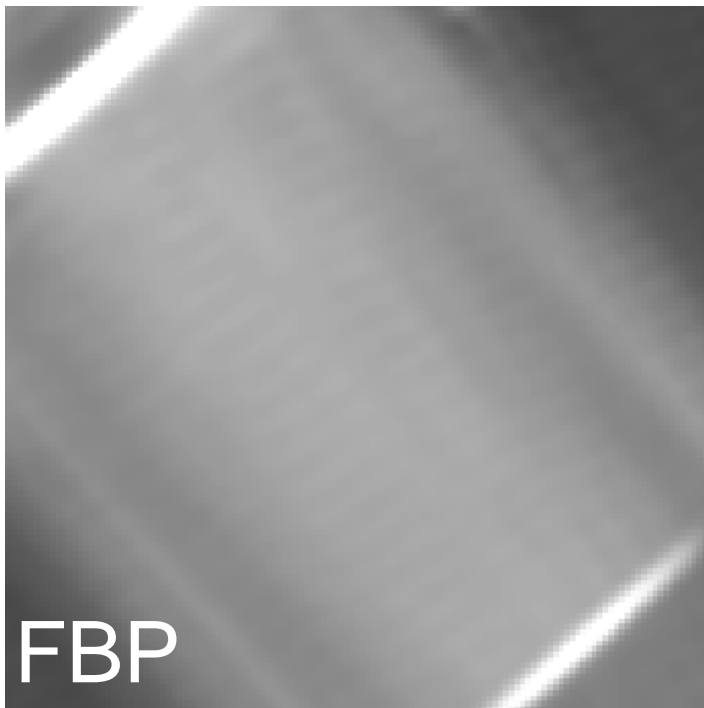
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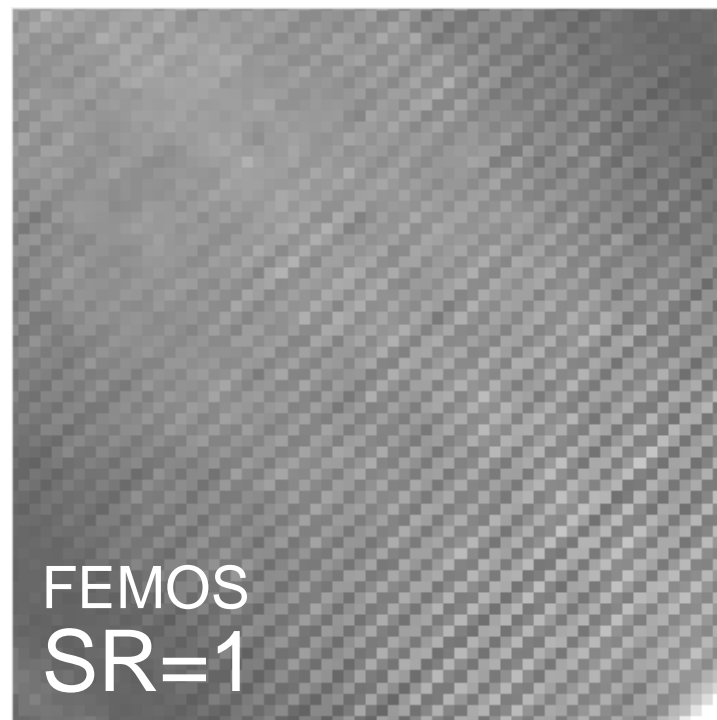


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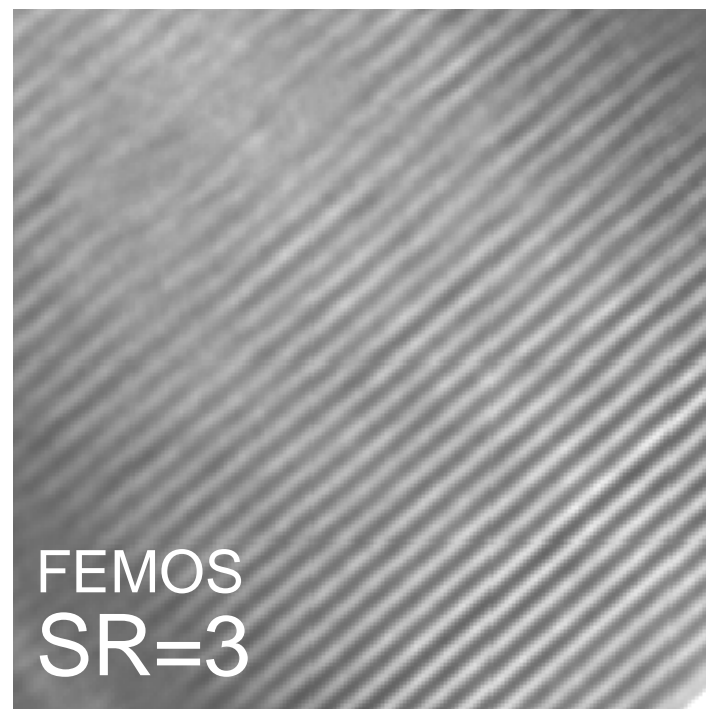
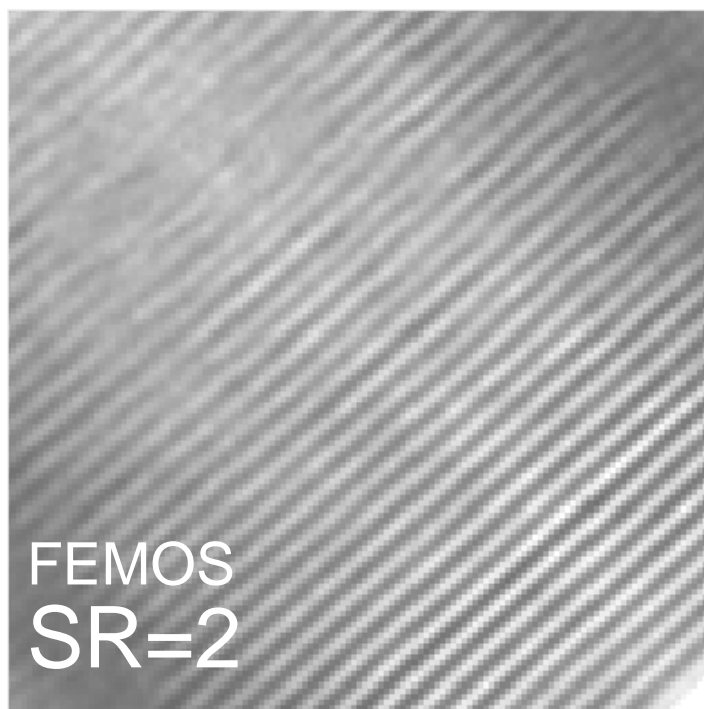


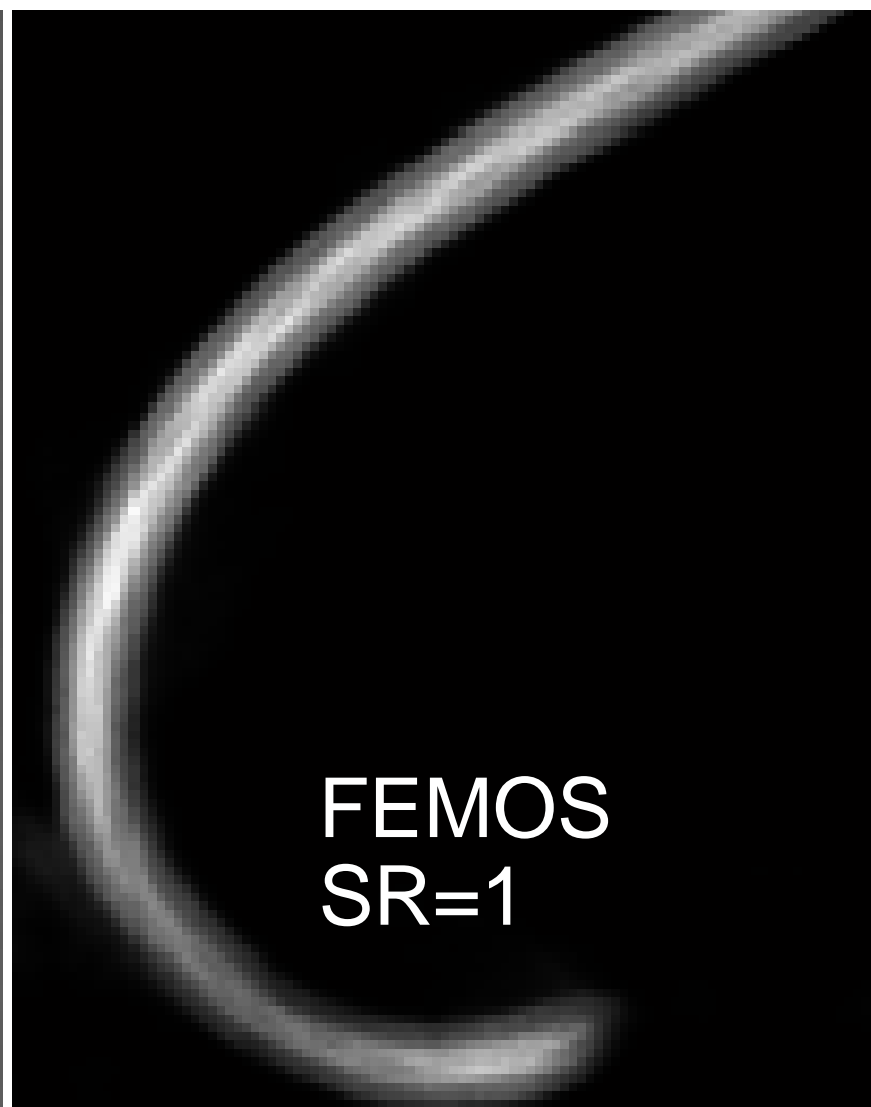
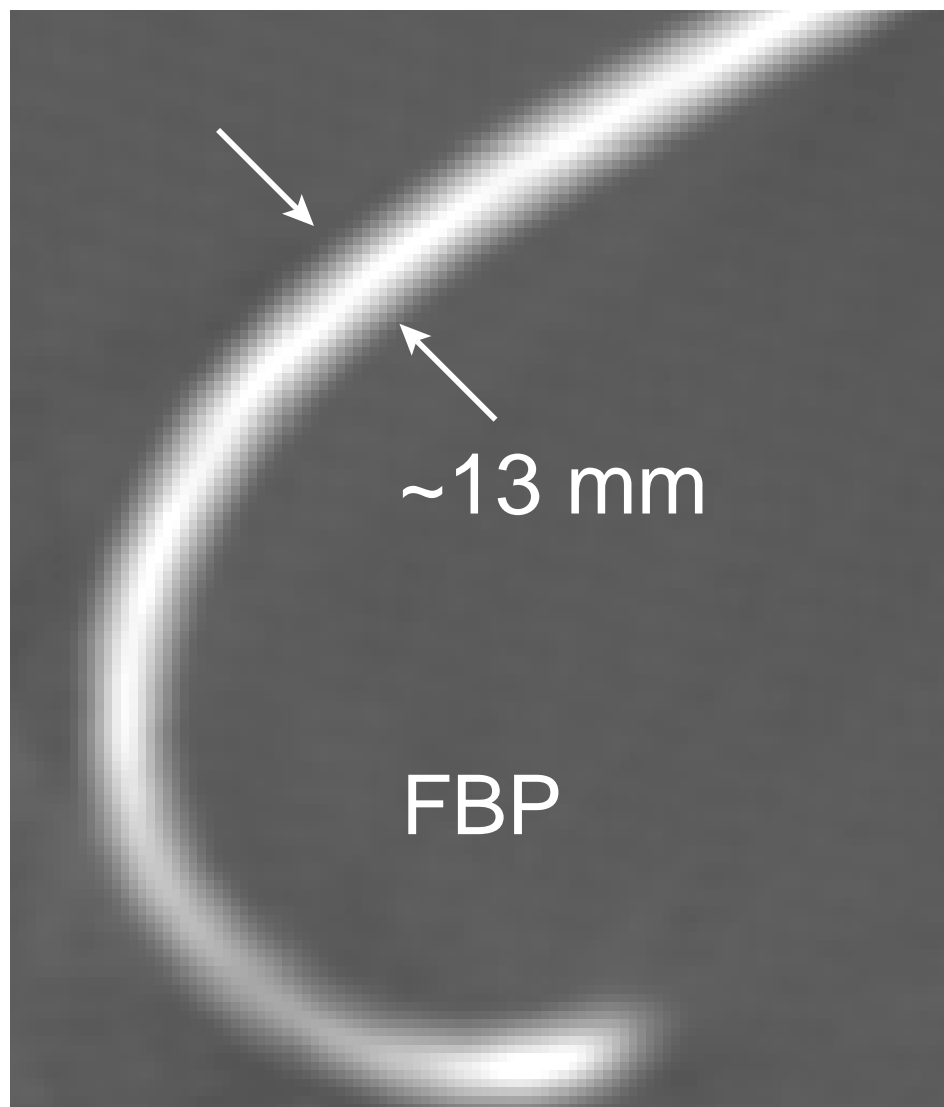
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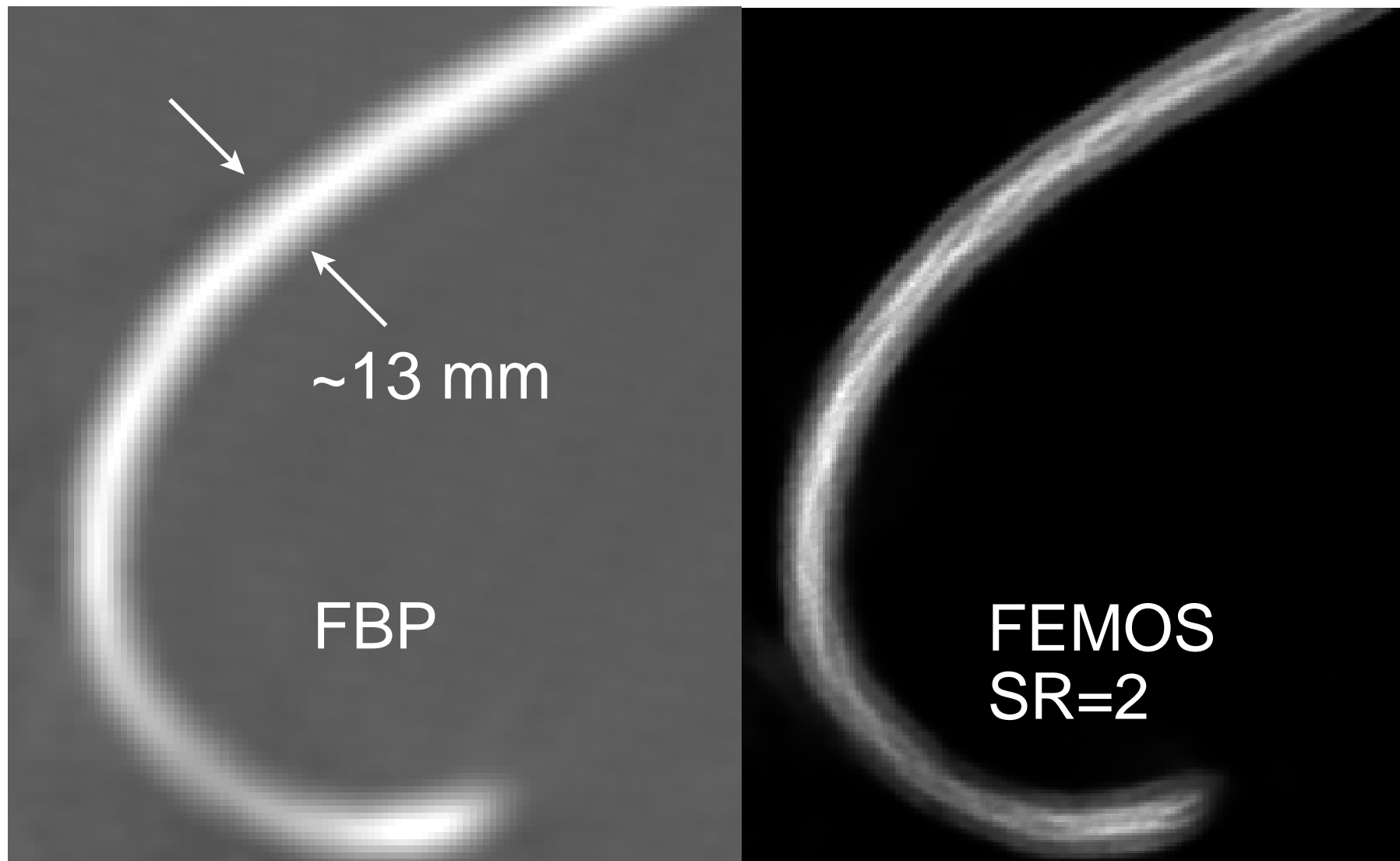


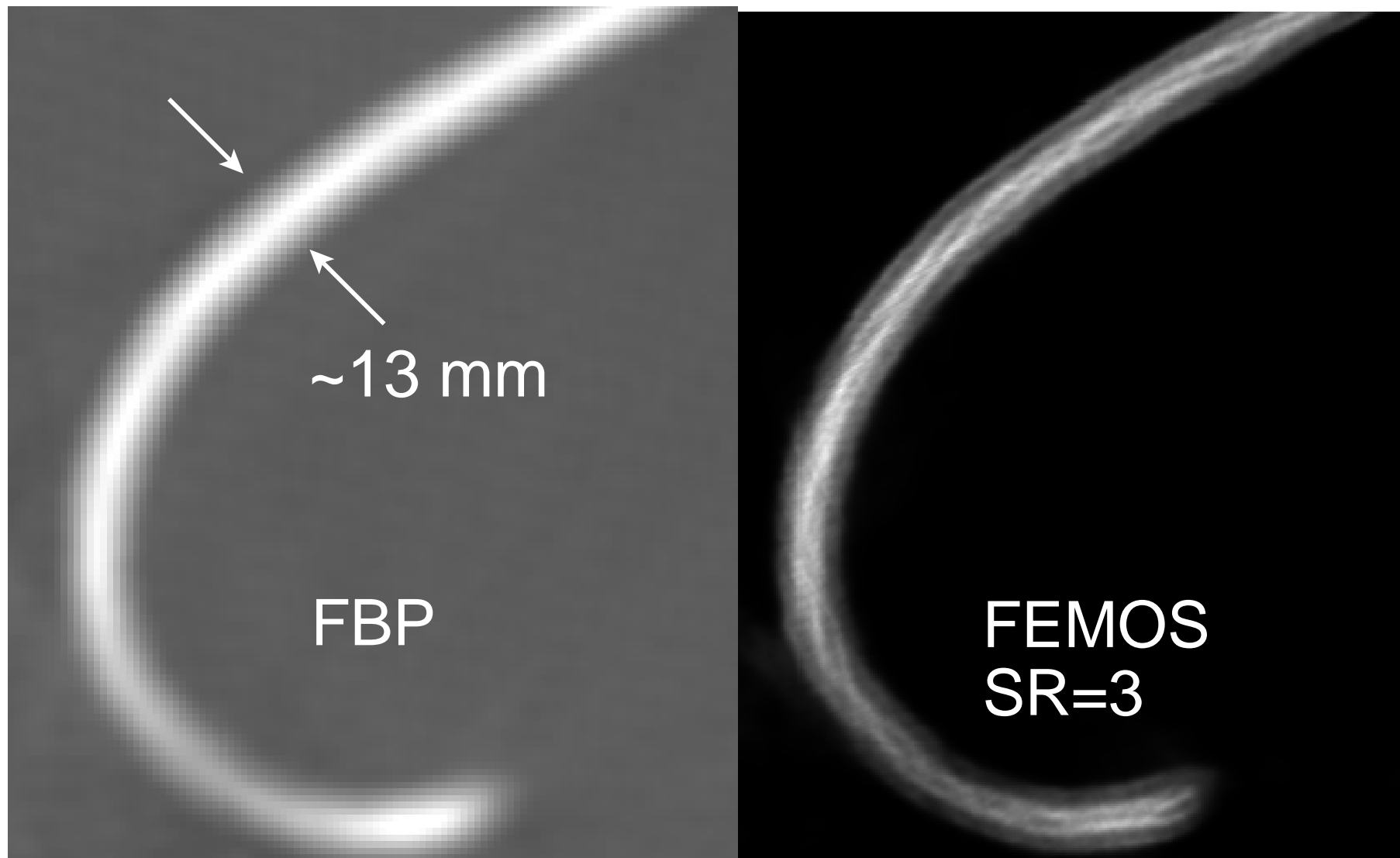


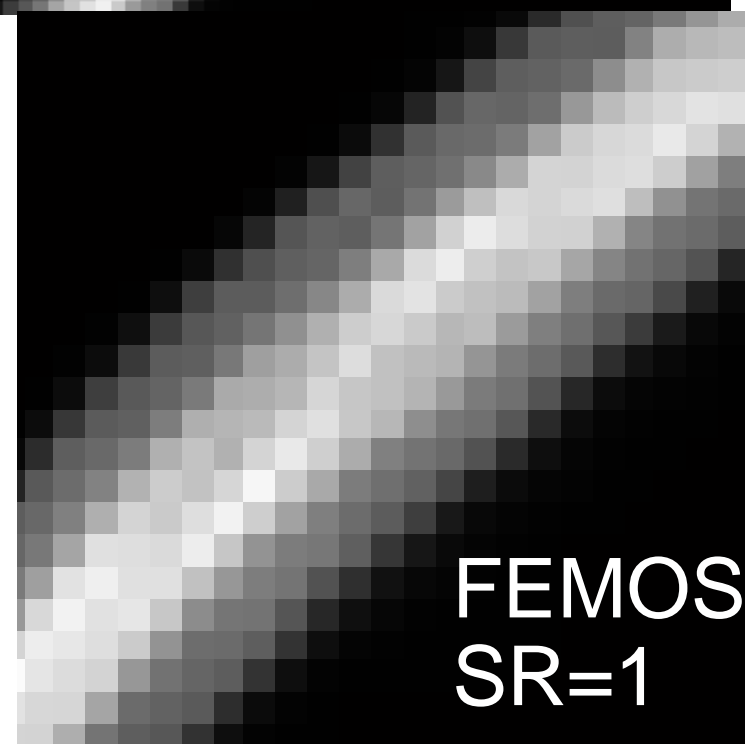
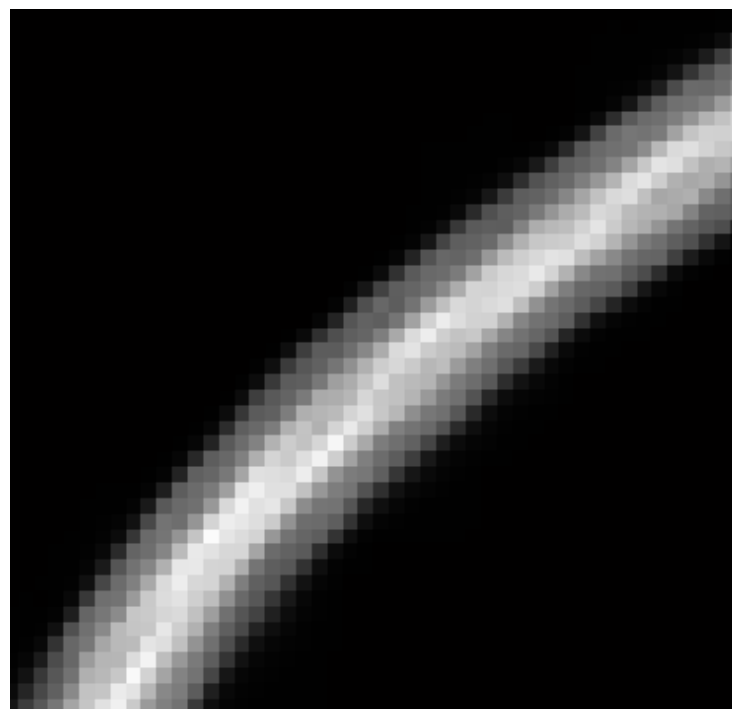
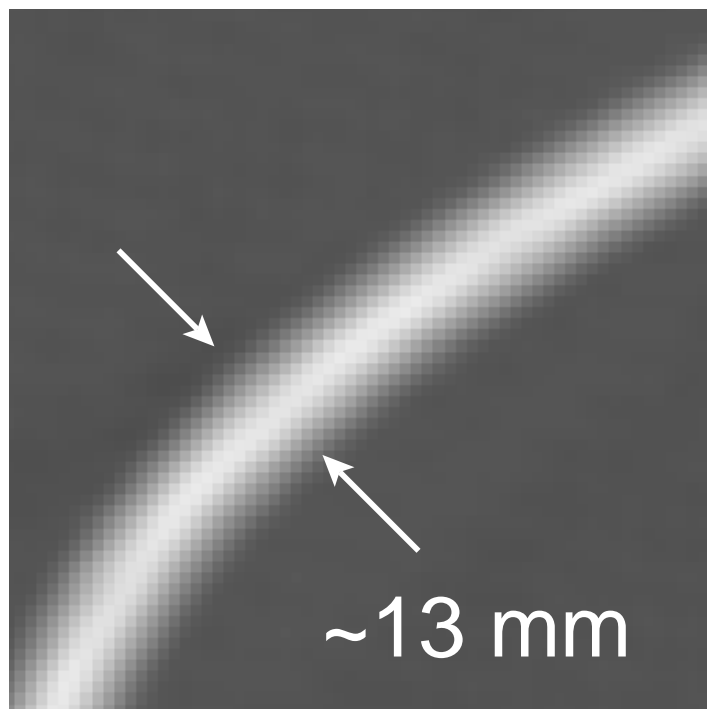
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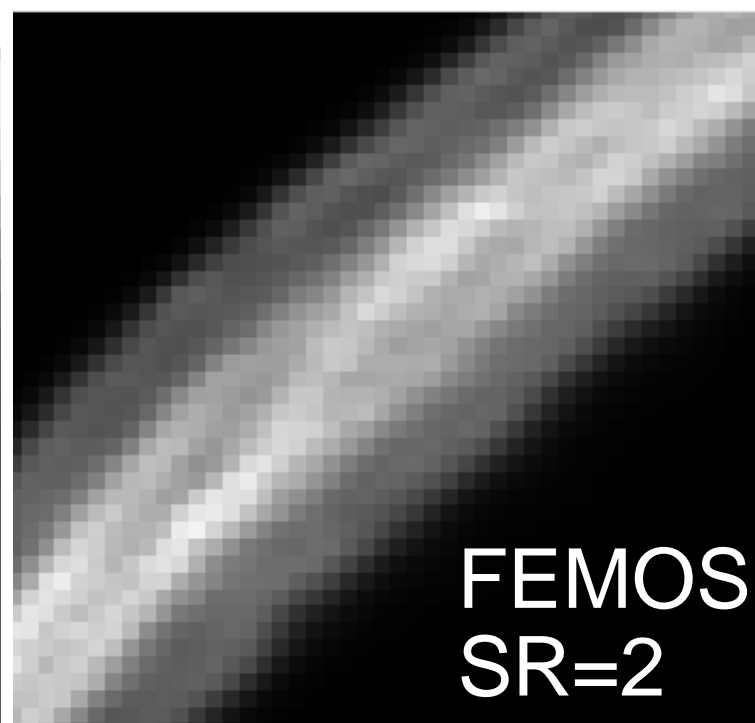
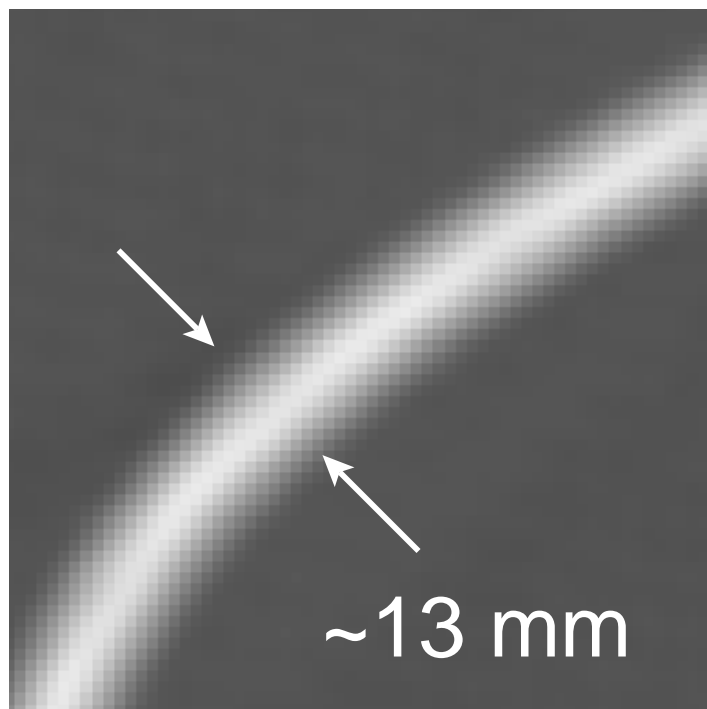


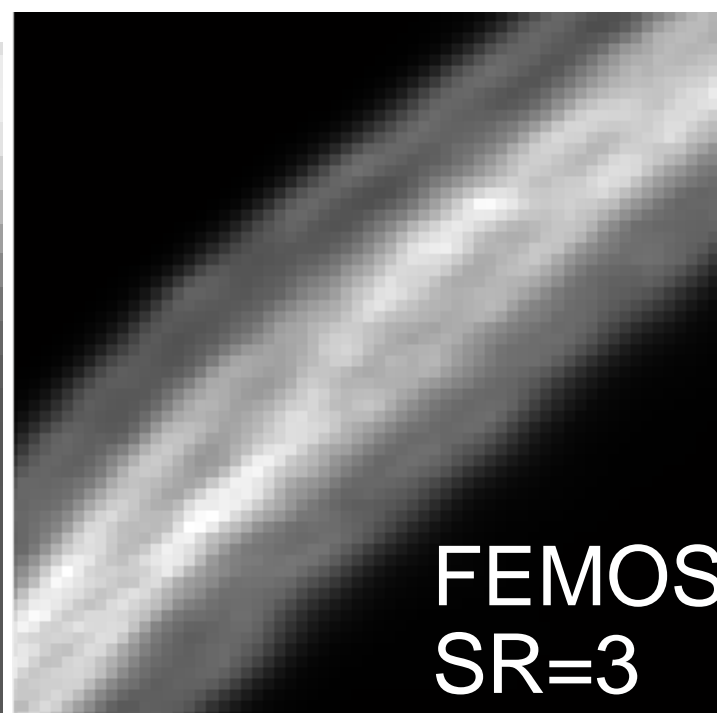
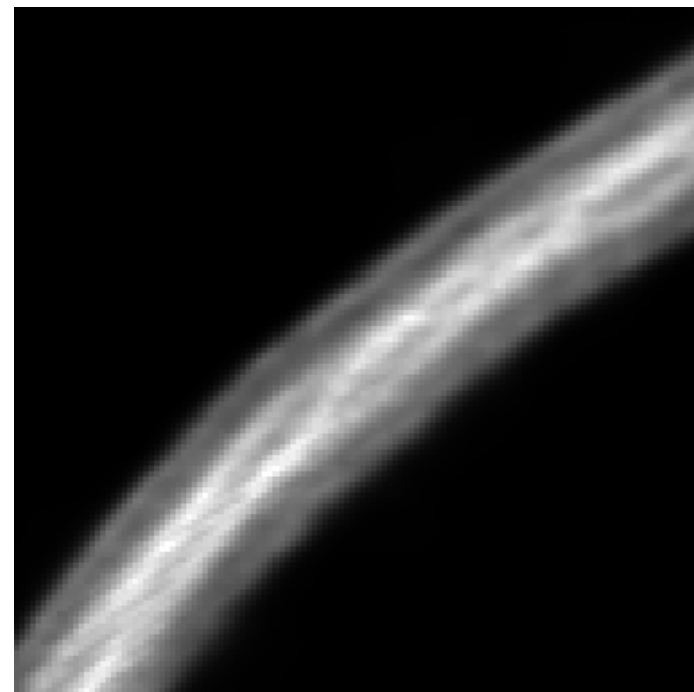
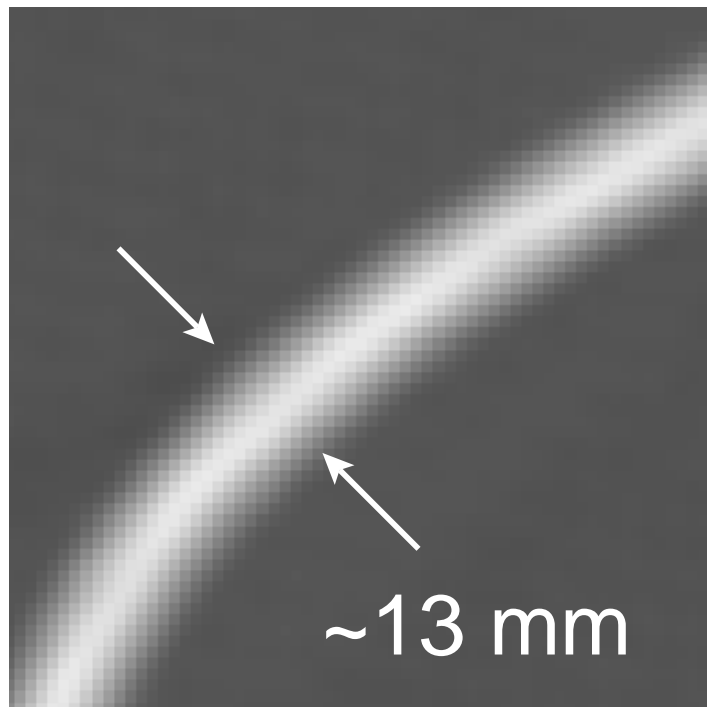












FBP

90 mm

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FBP

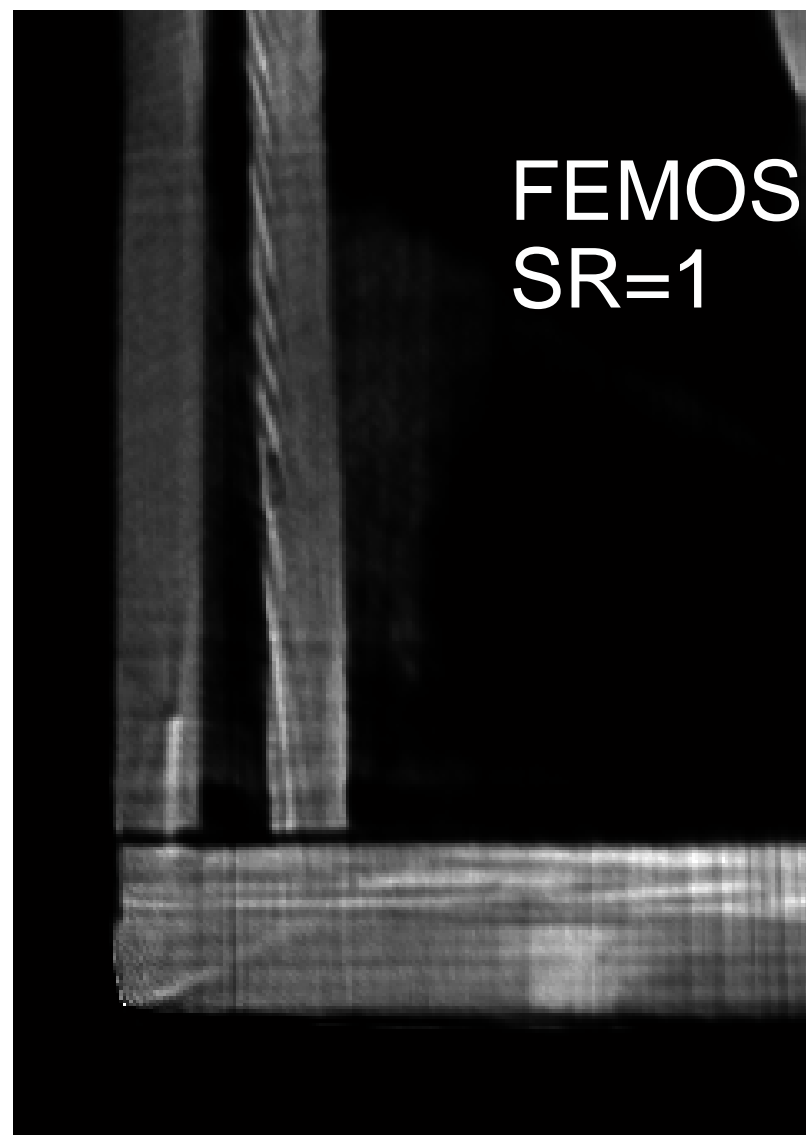
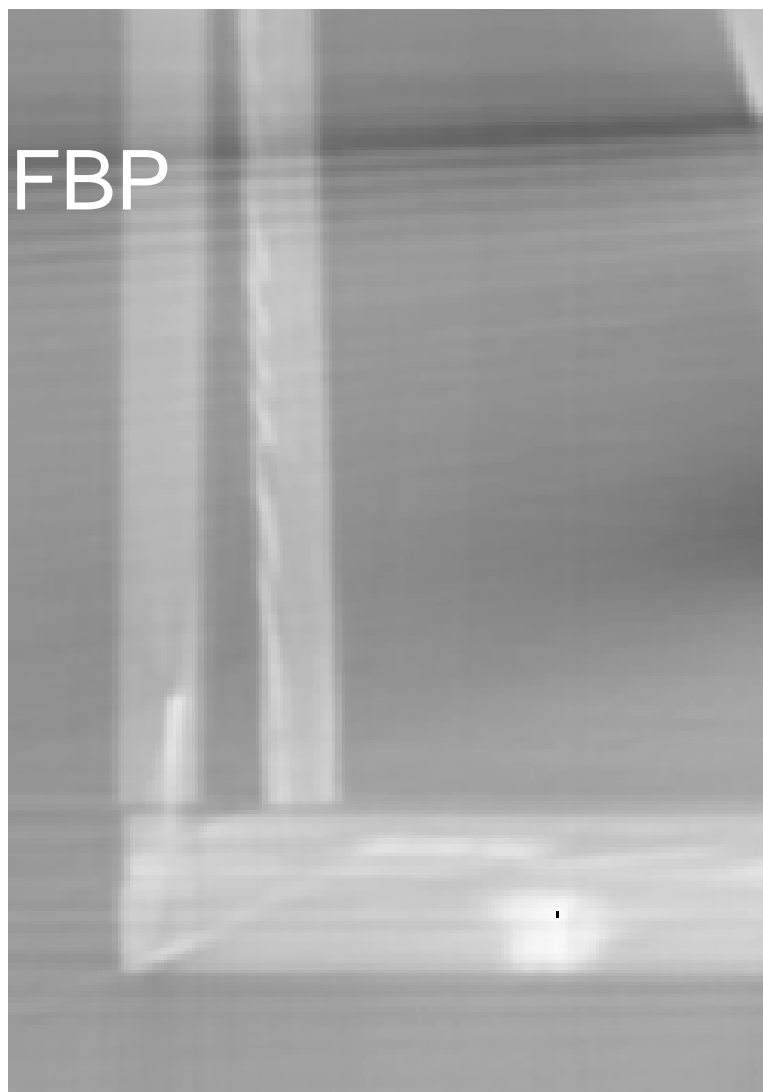
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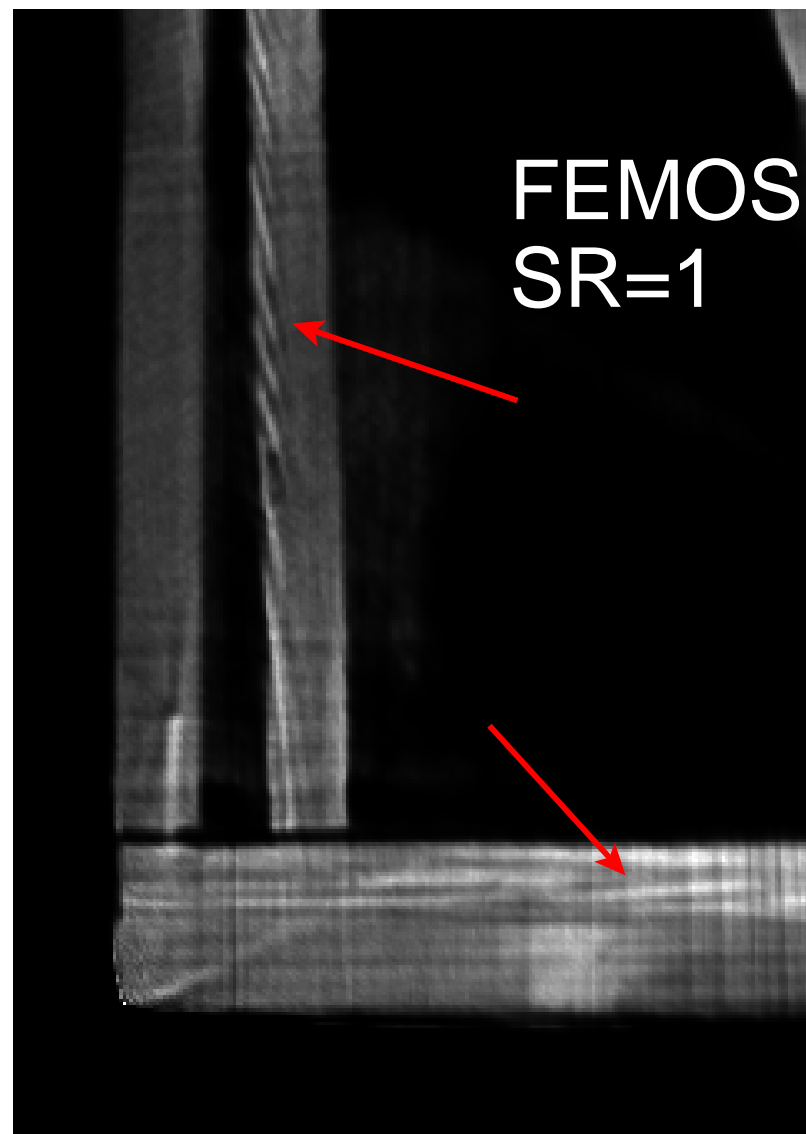
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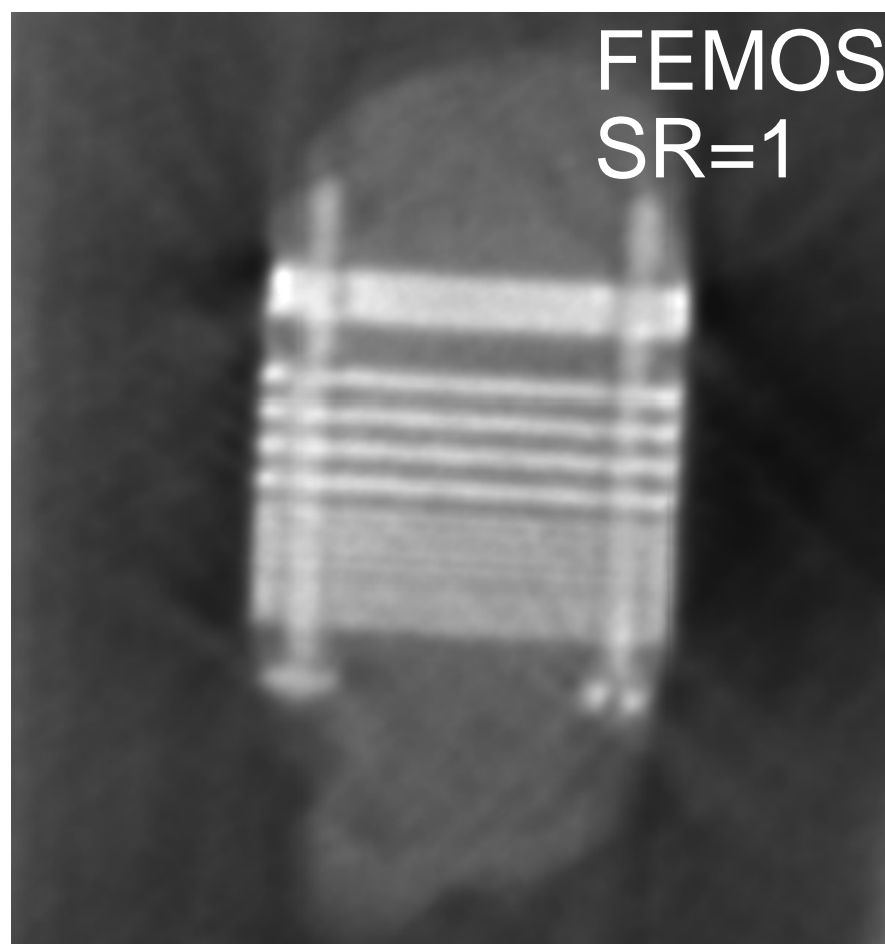
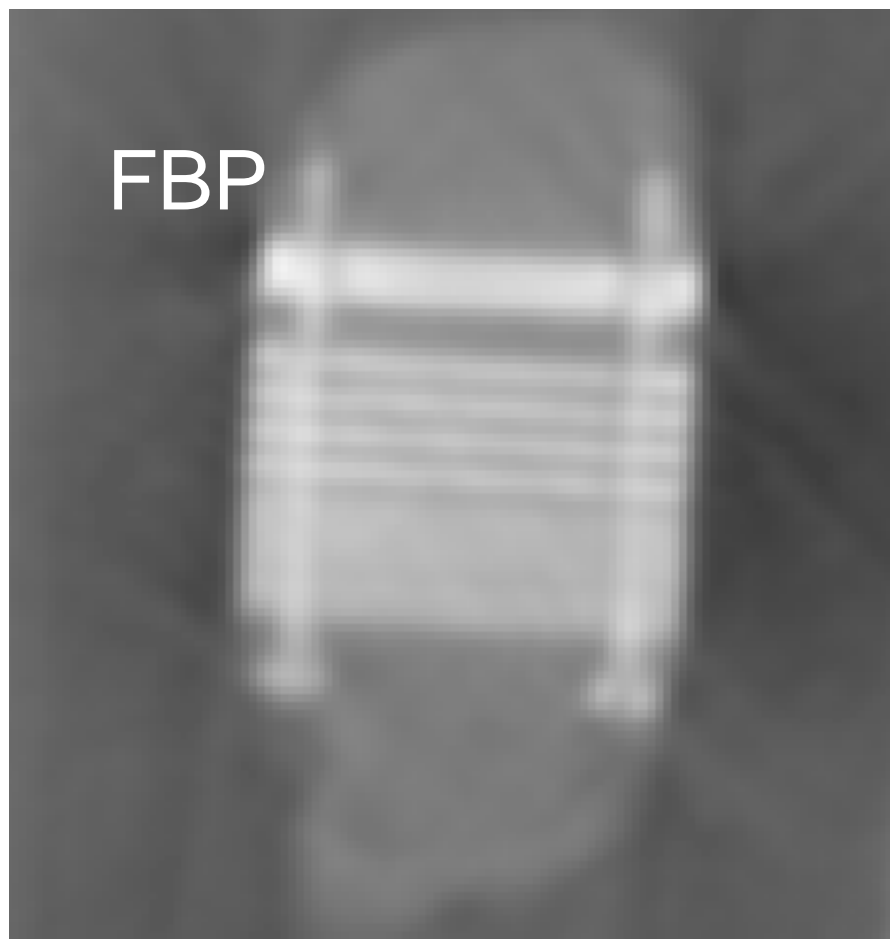
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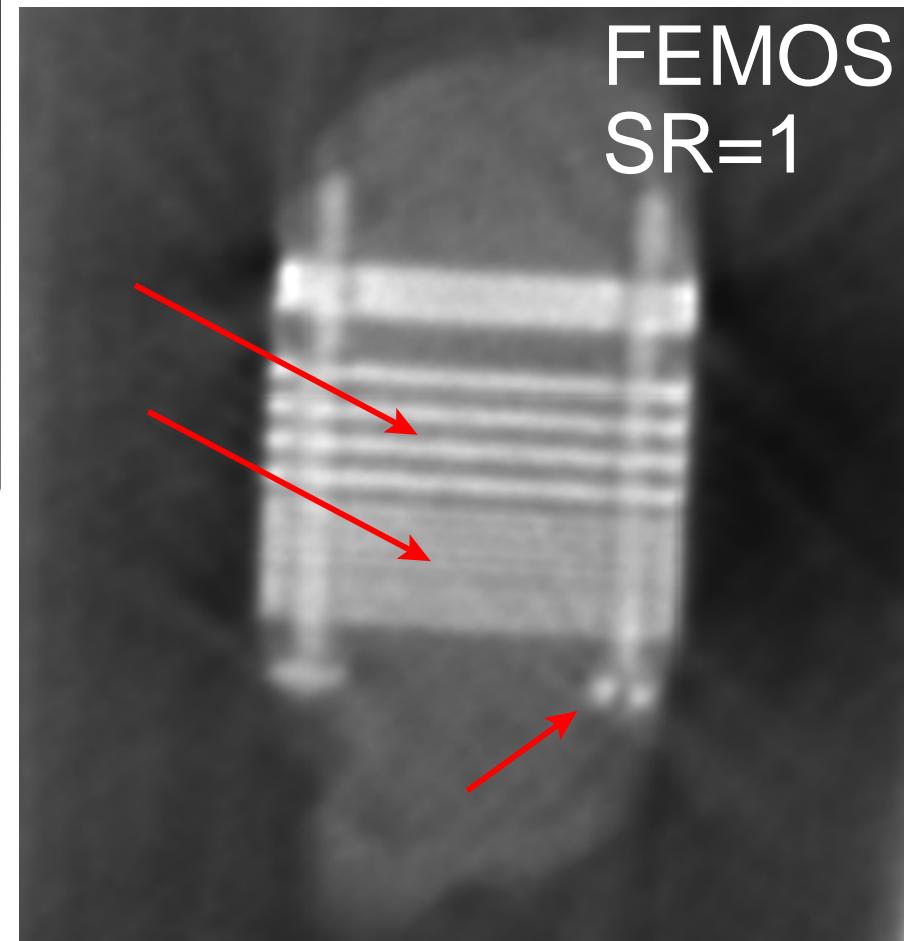
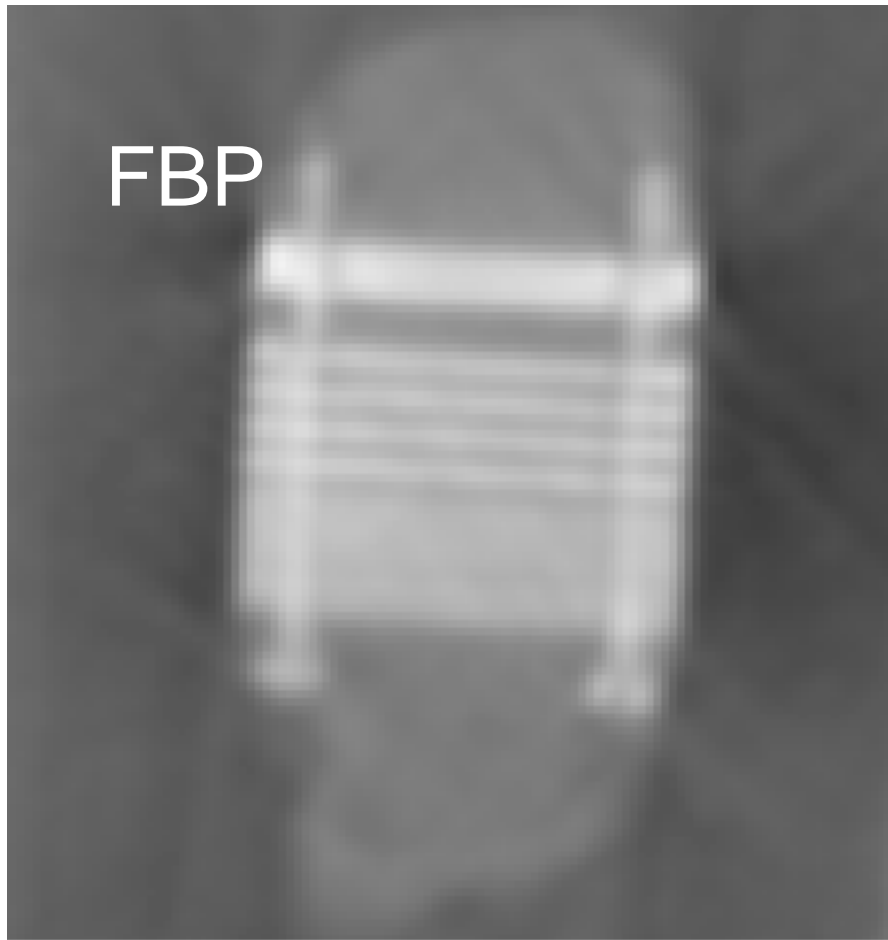
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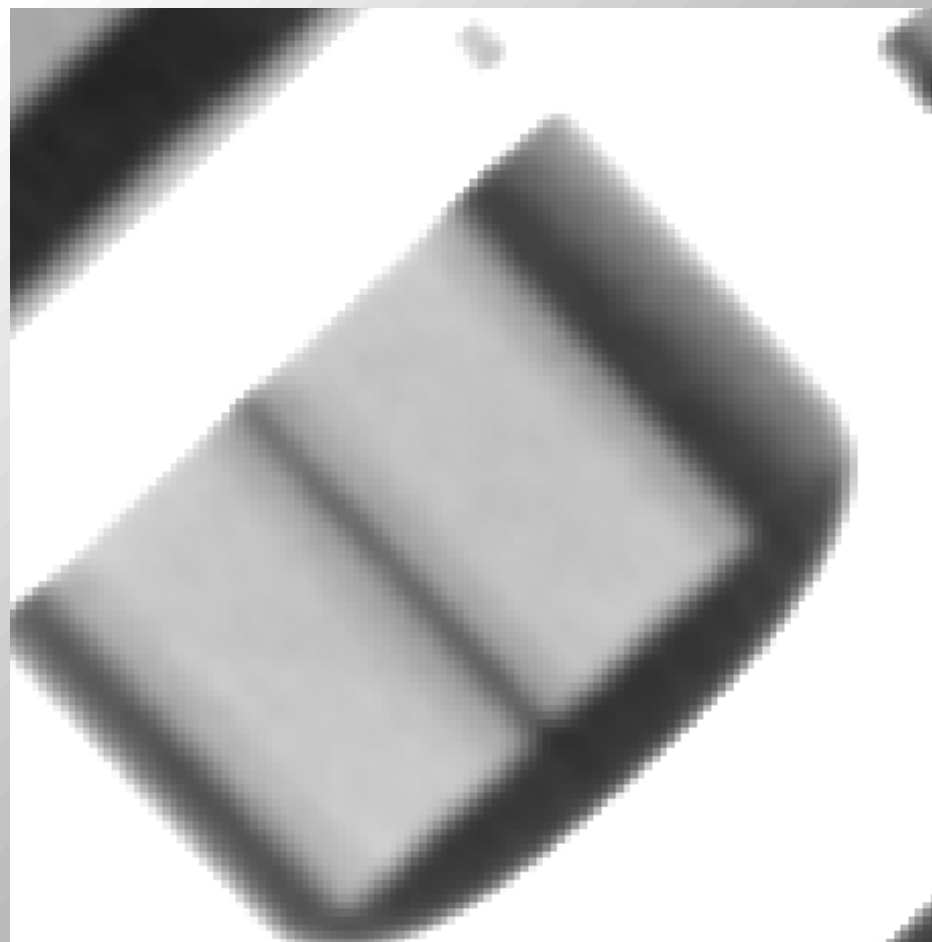
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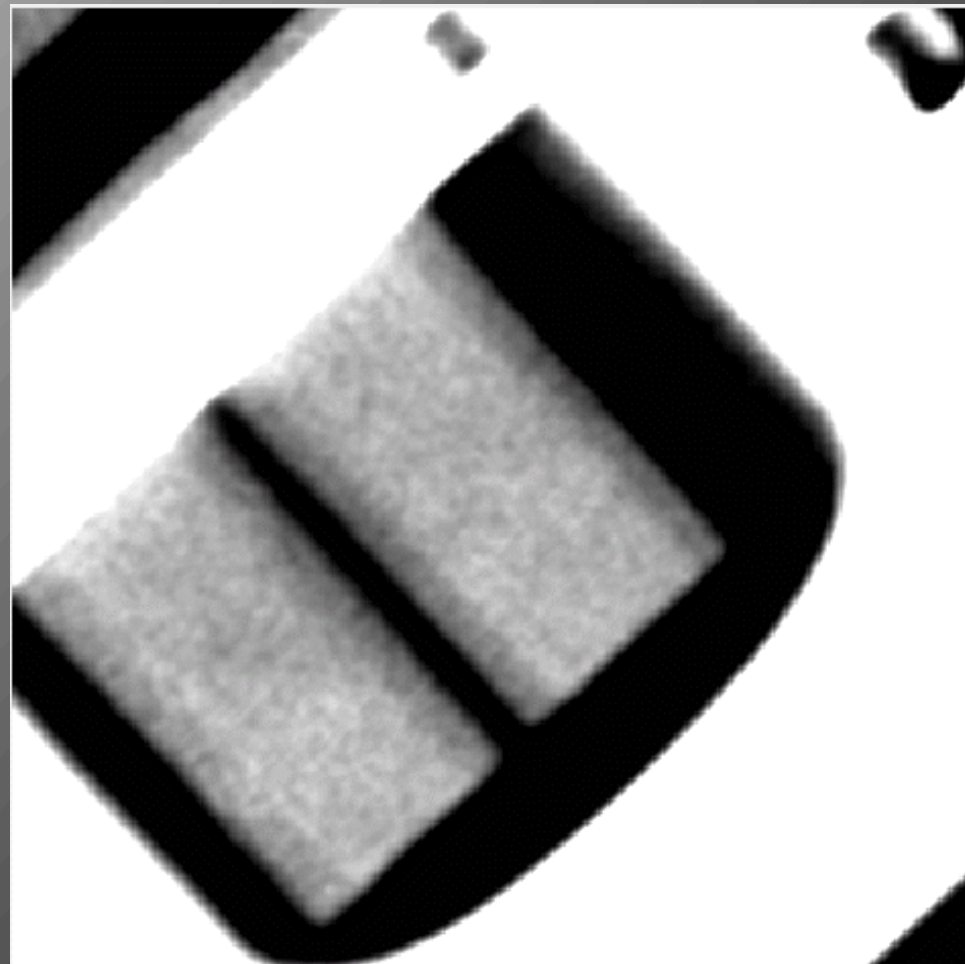


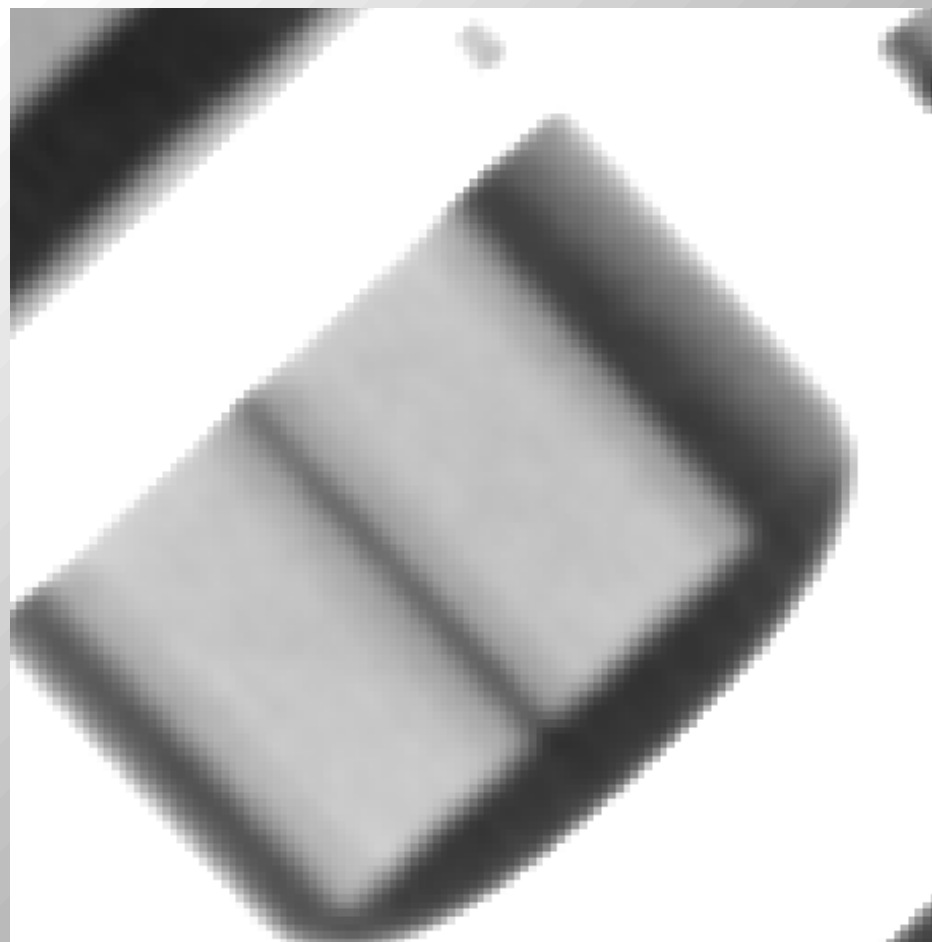




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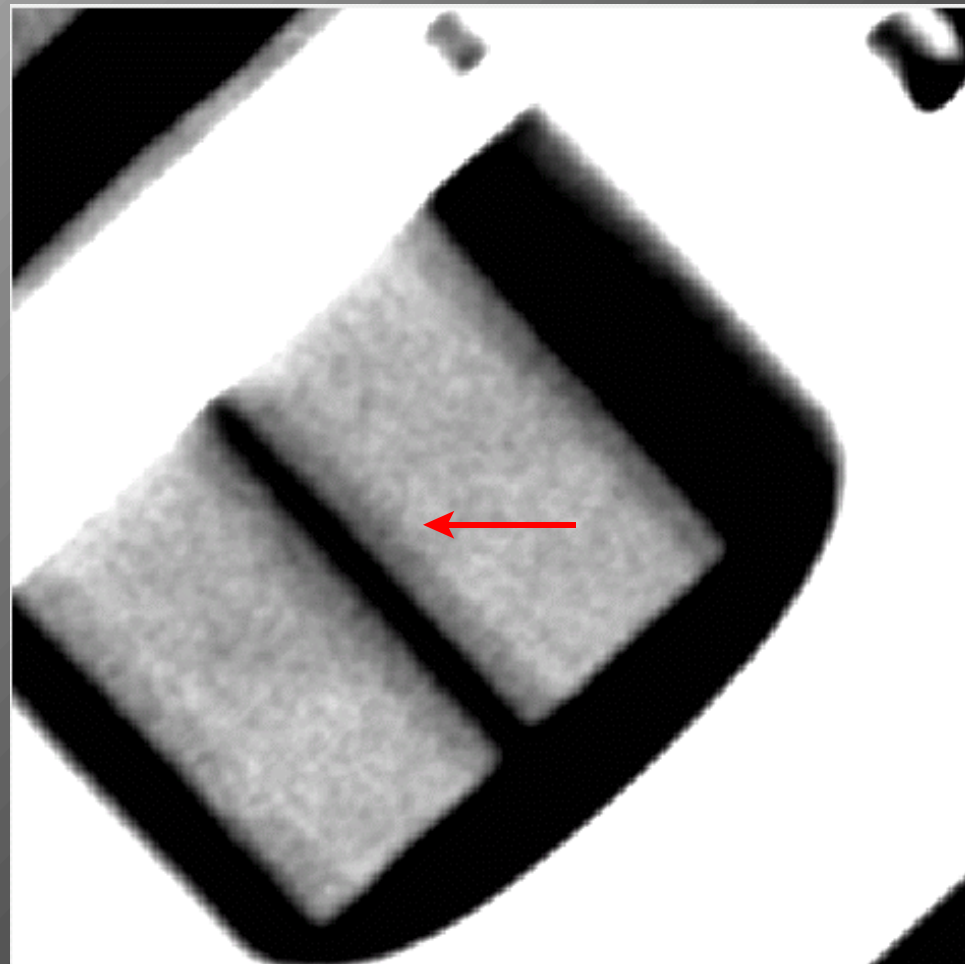
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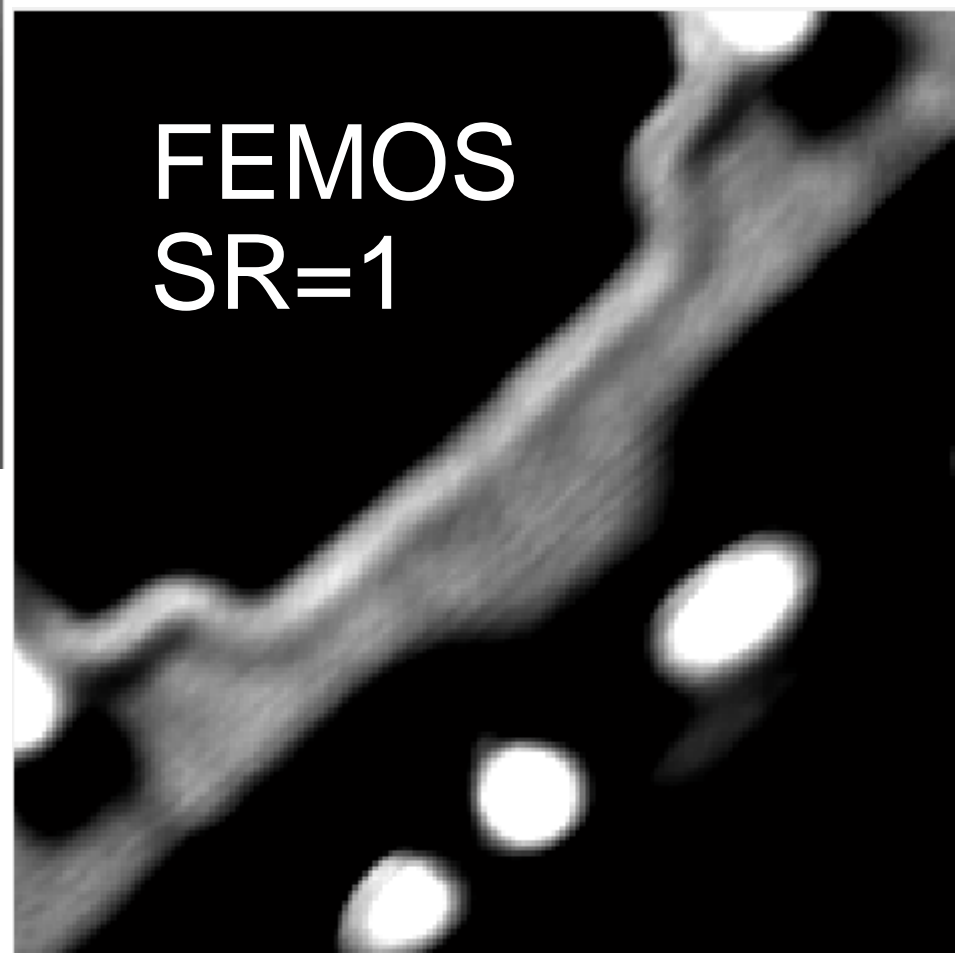
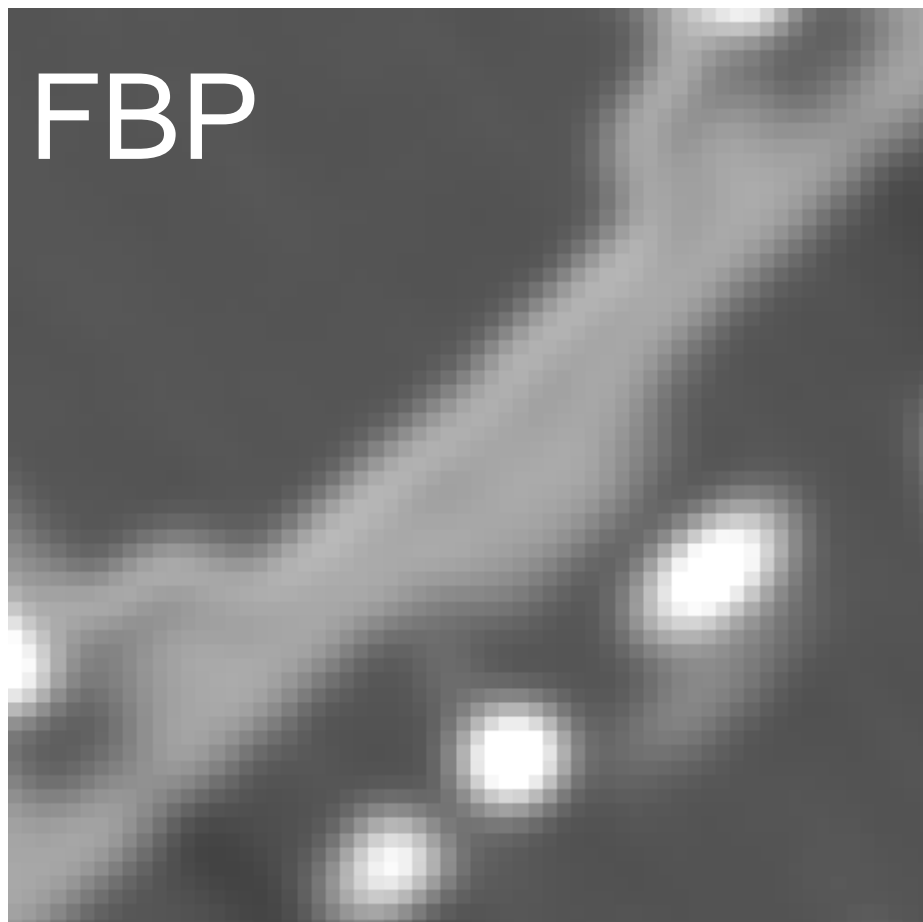


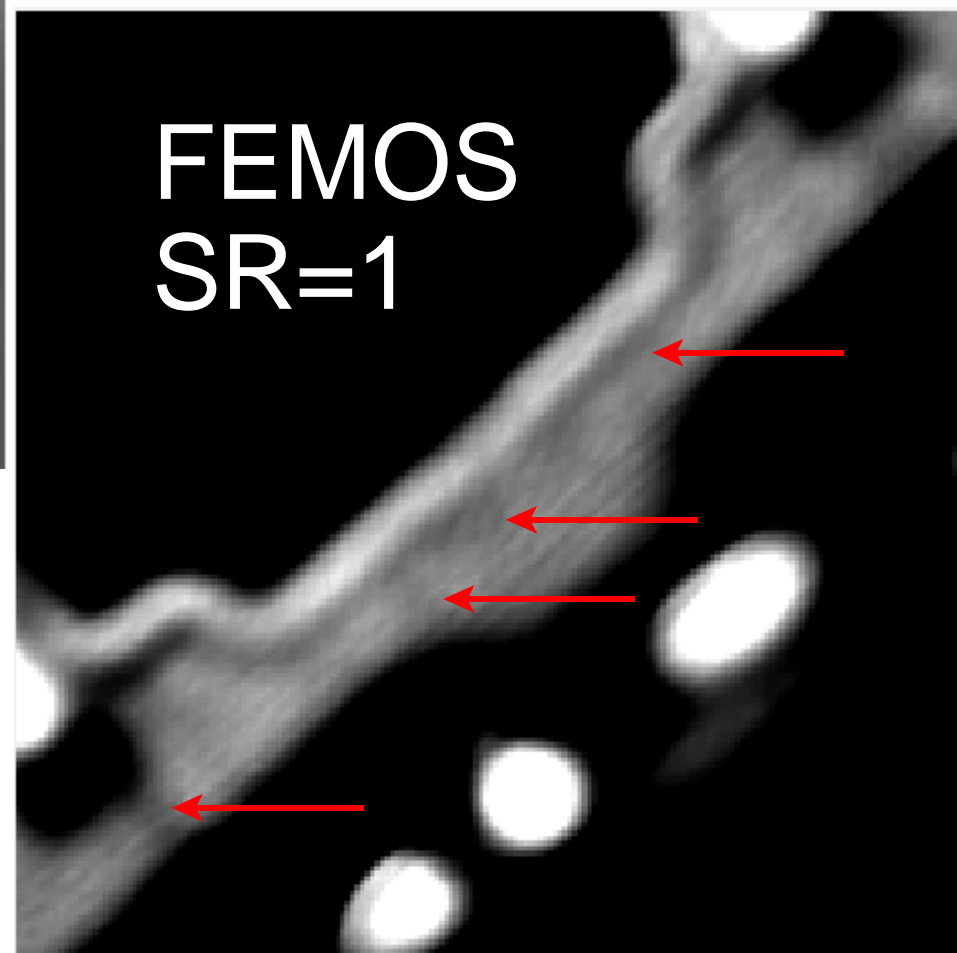
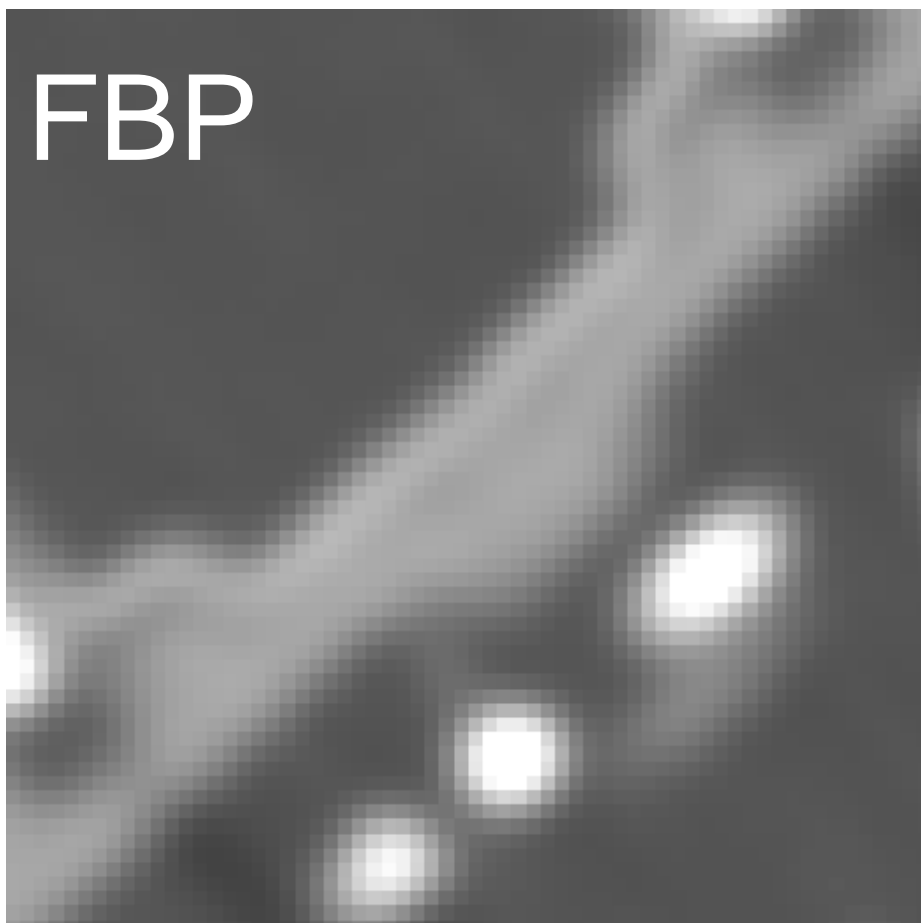


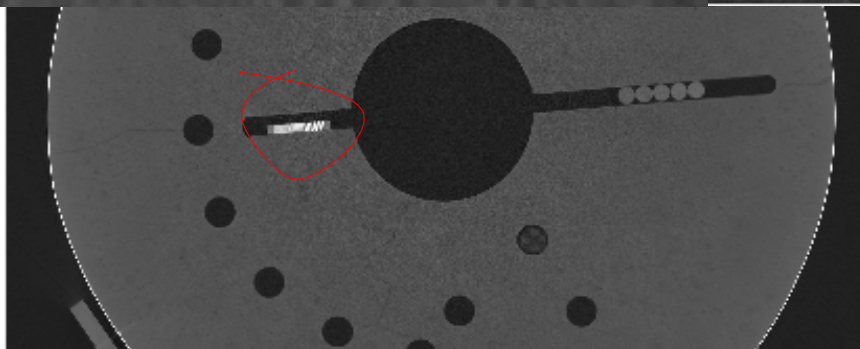
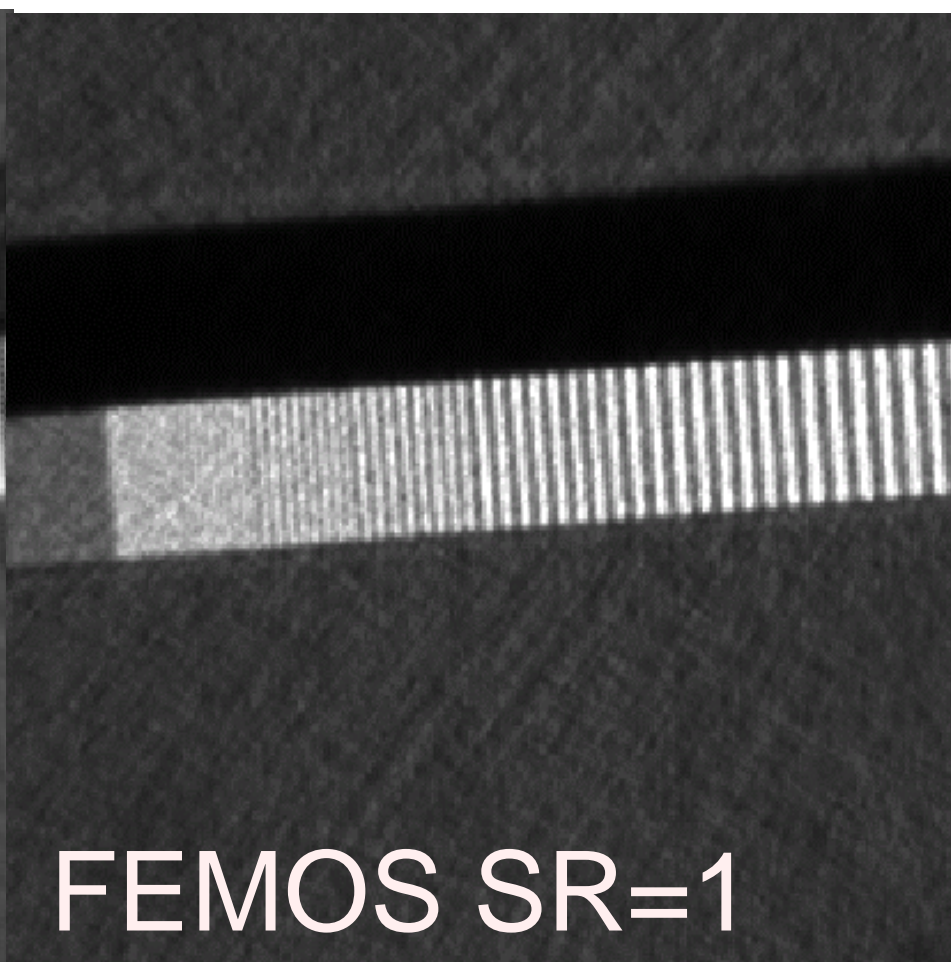
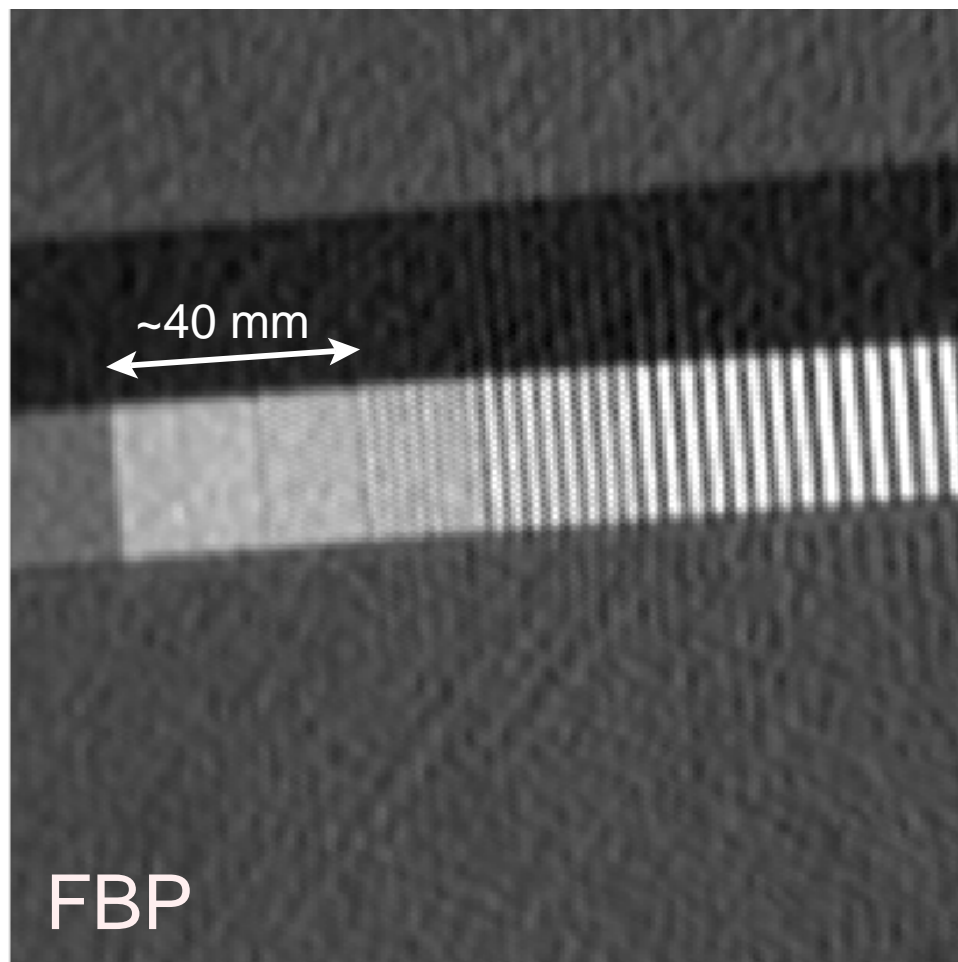
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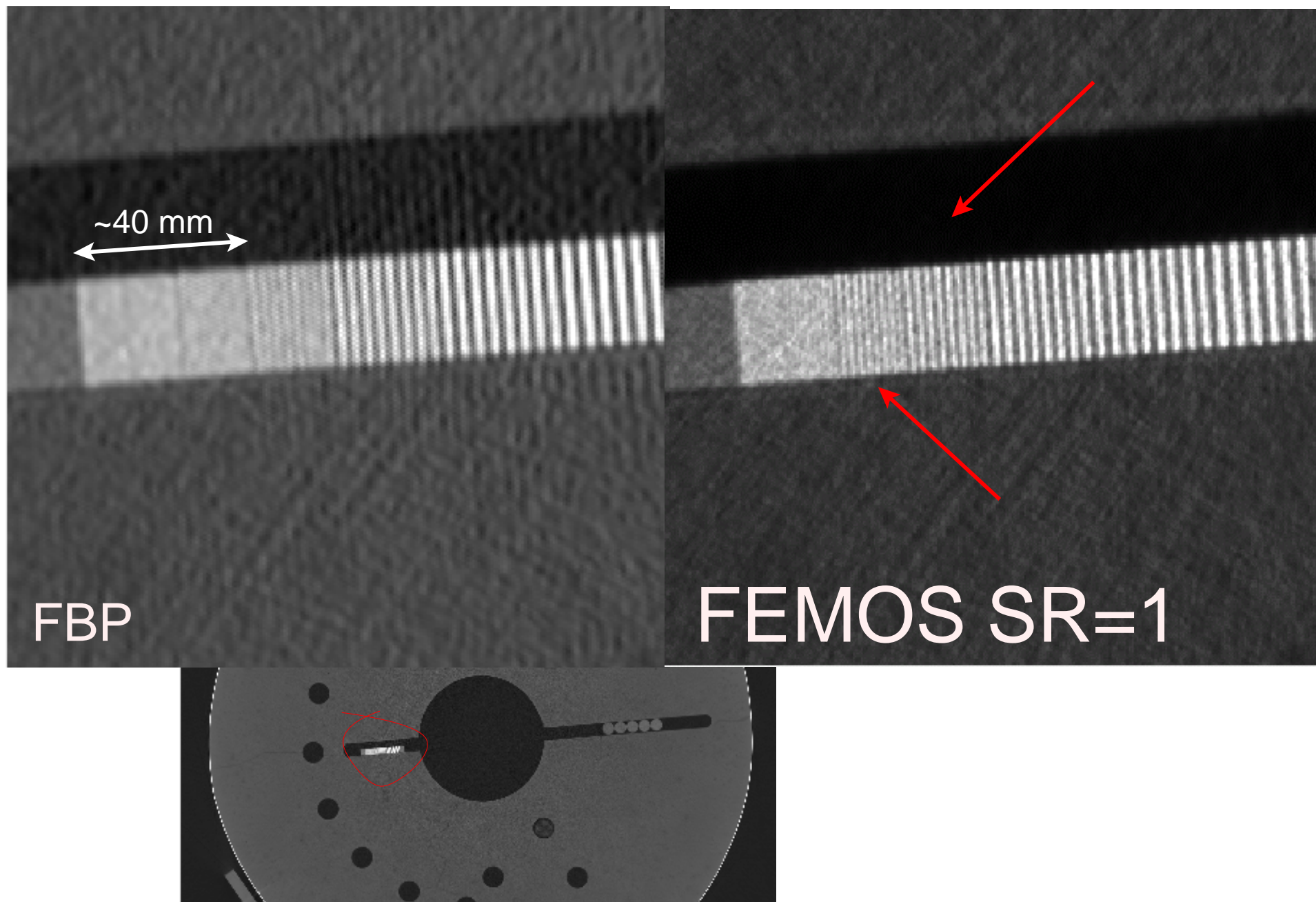
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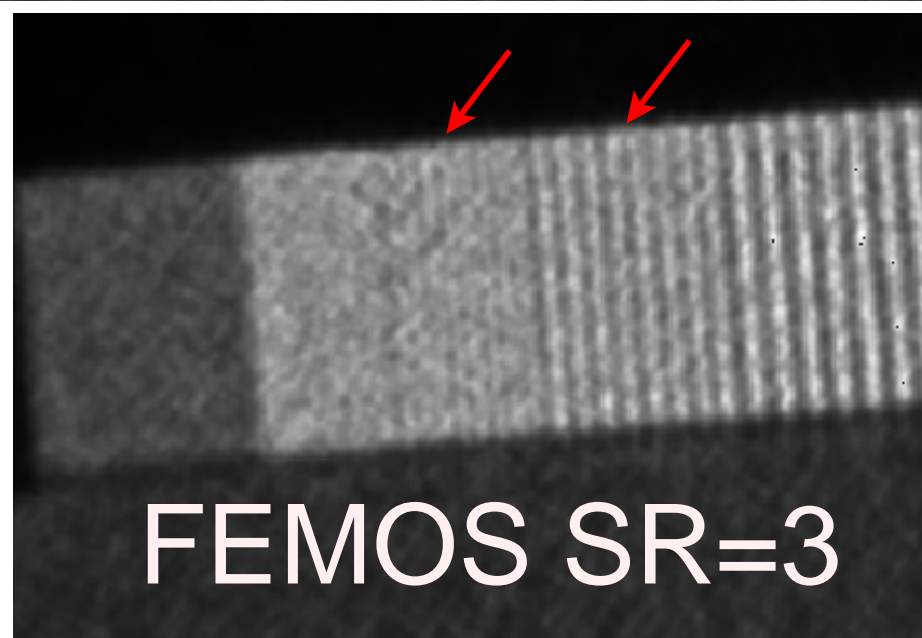
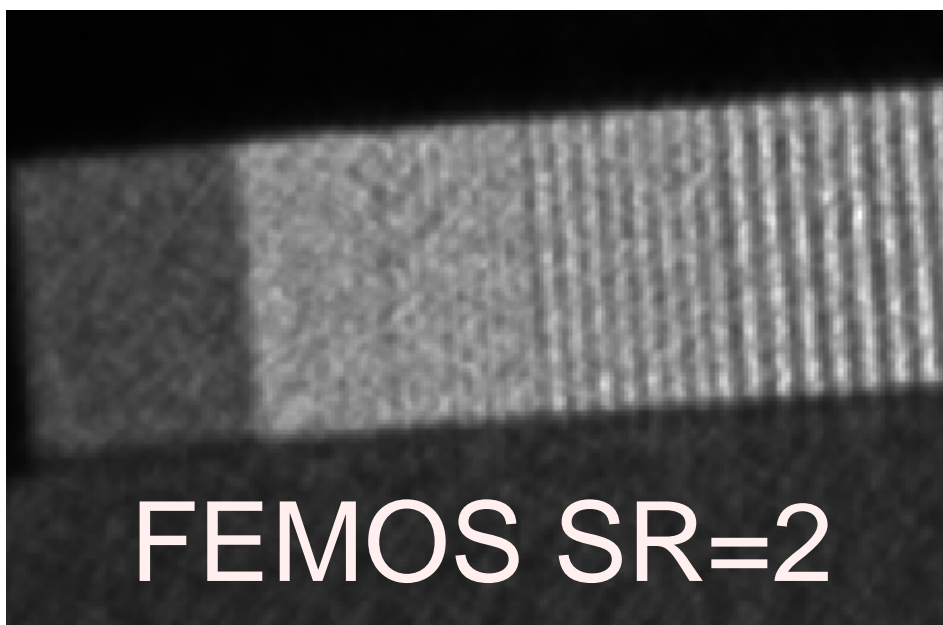
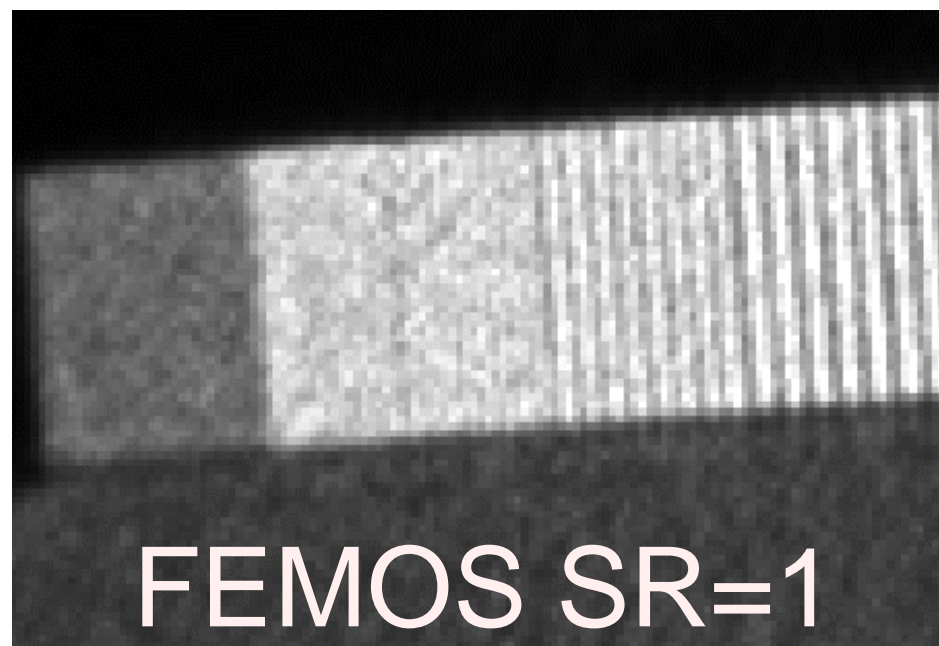
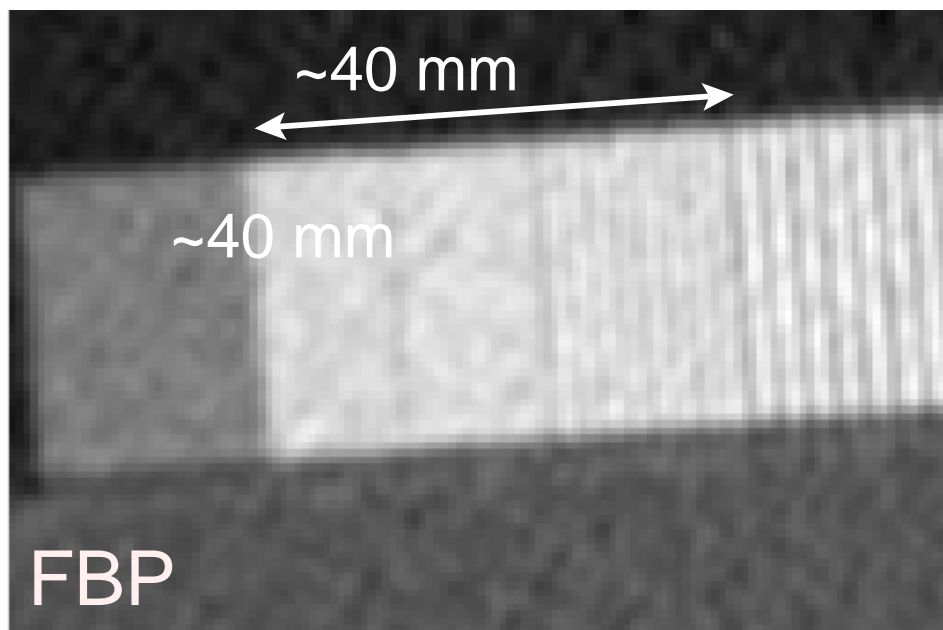


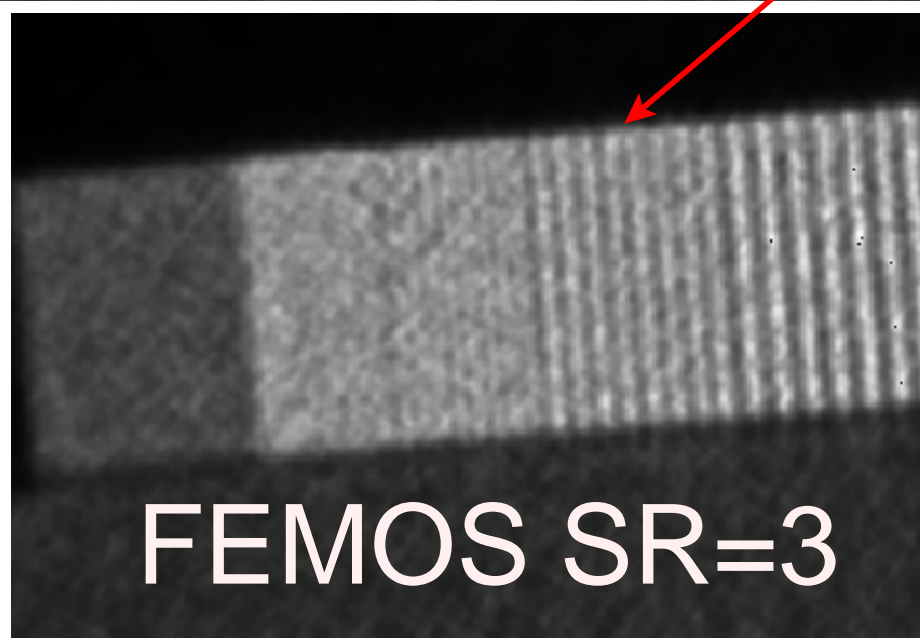
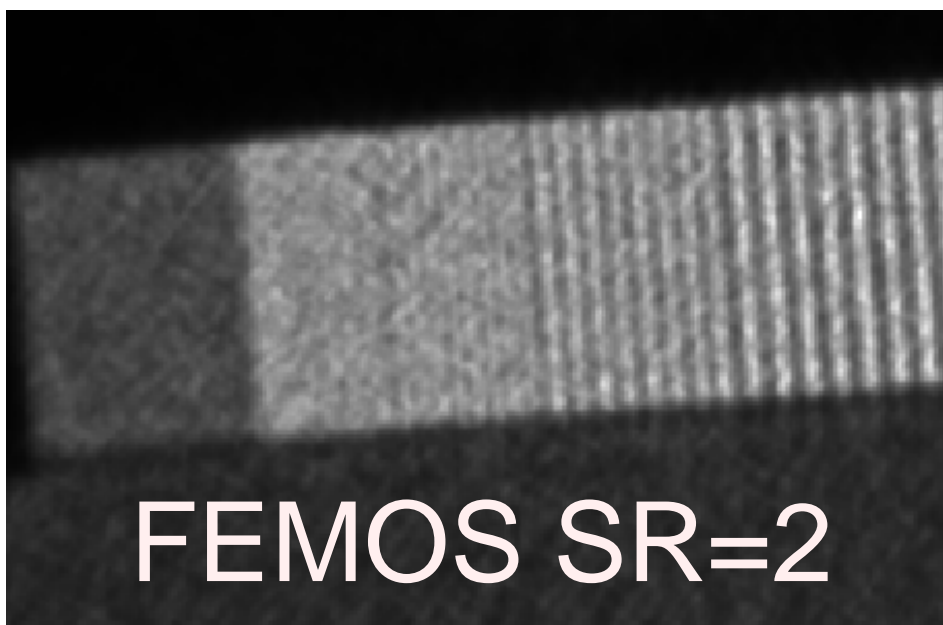
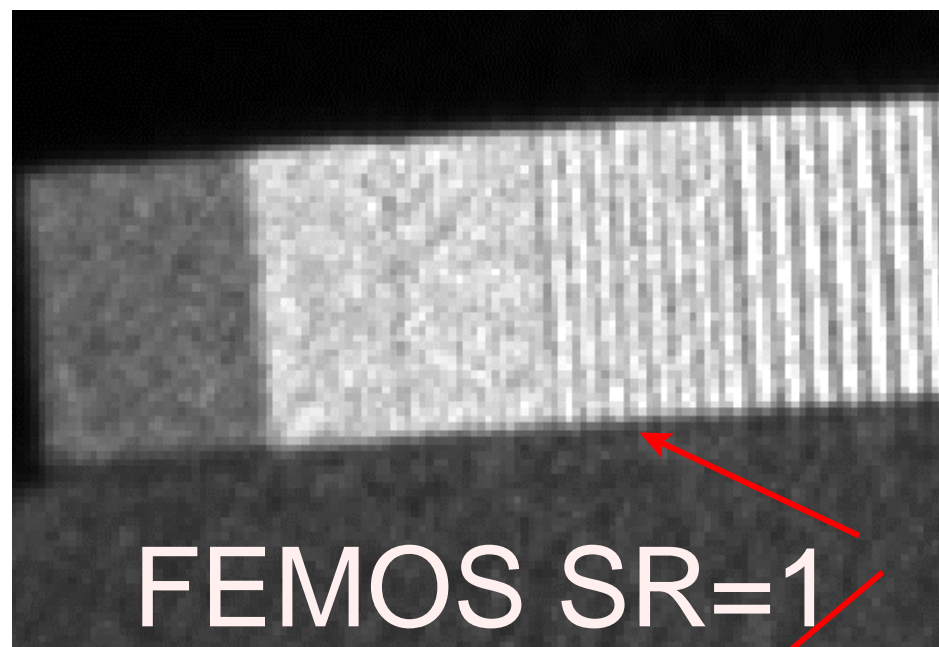
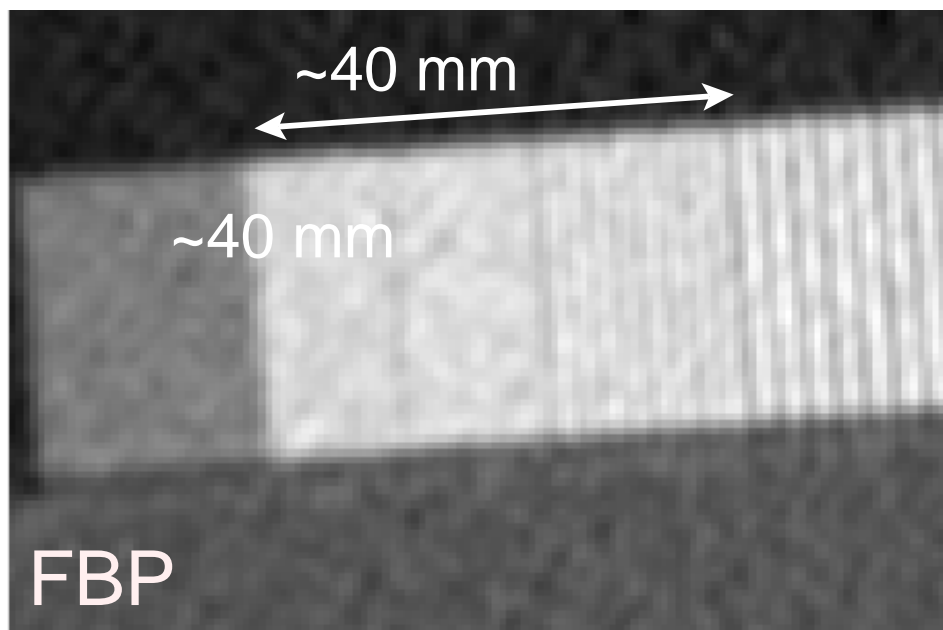


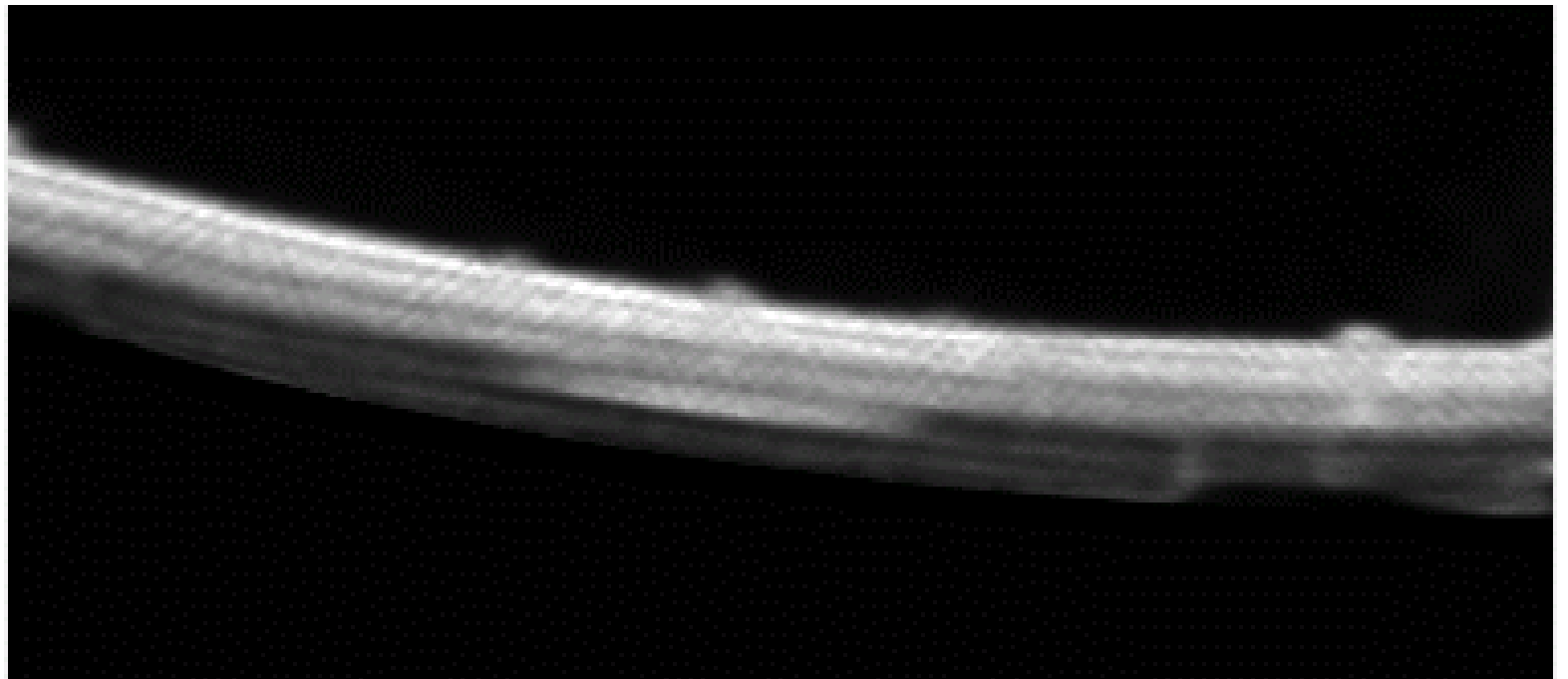
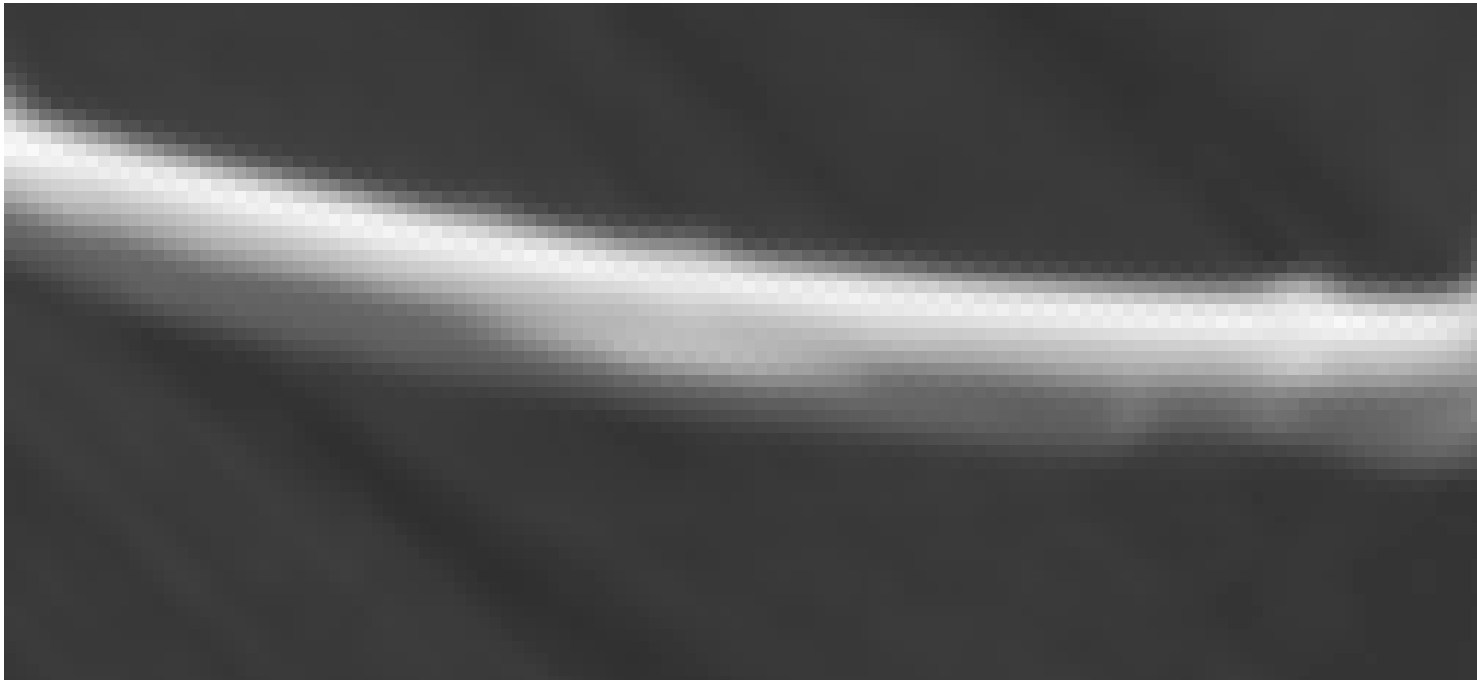




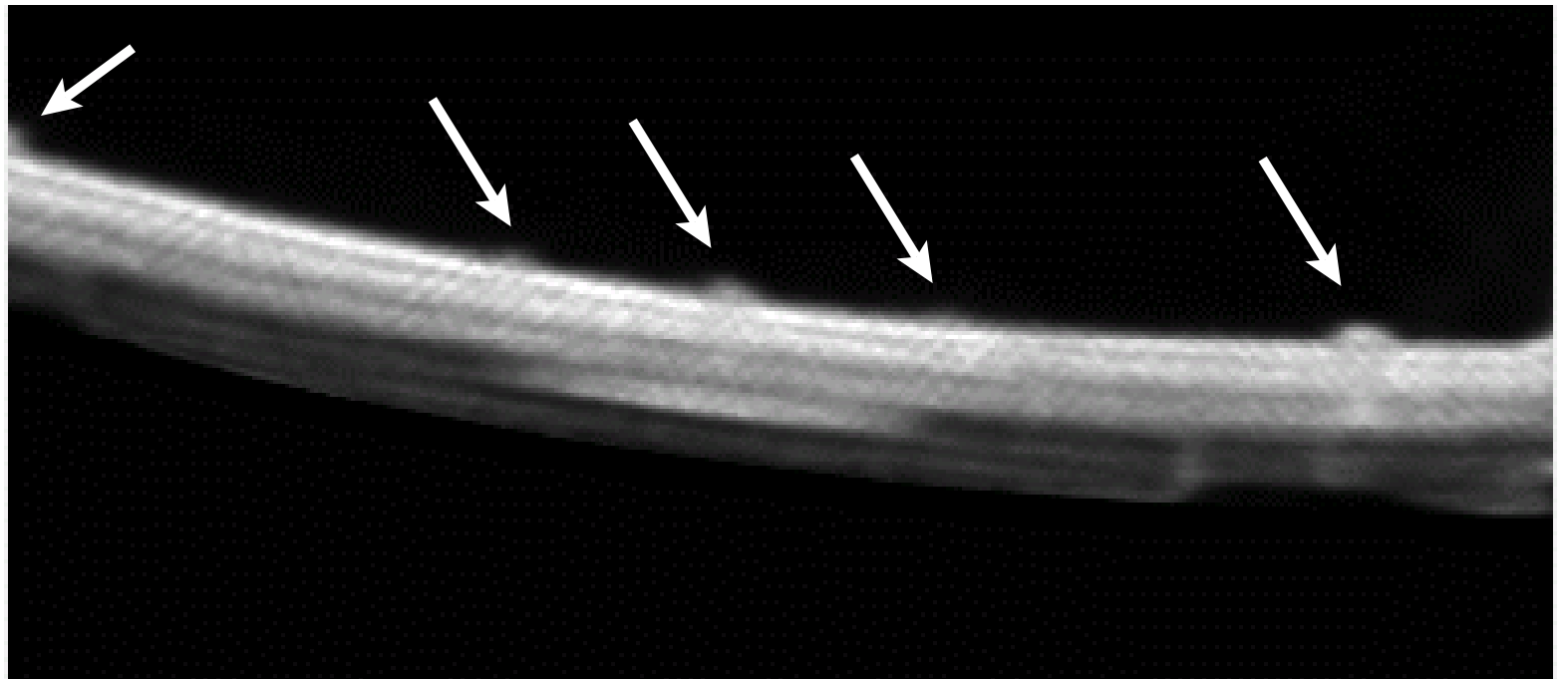
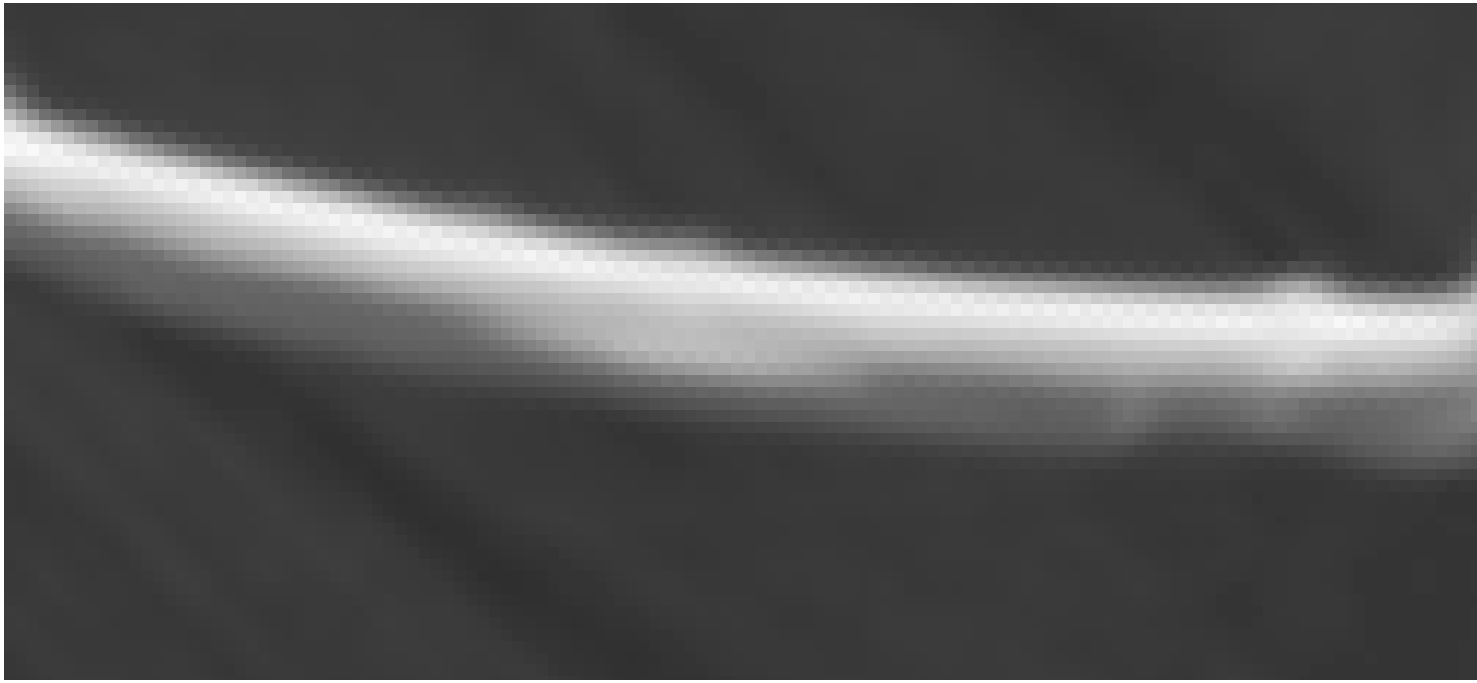




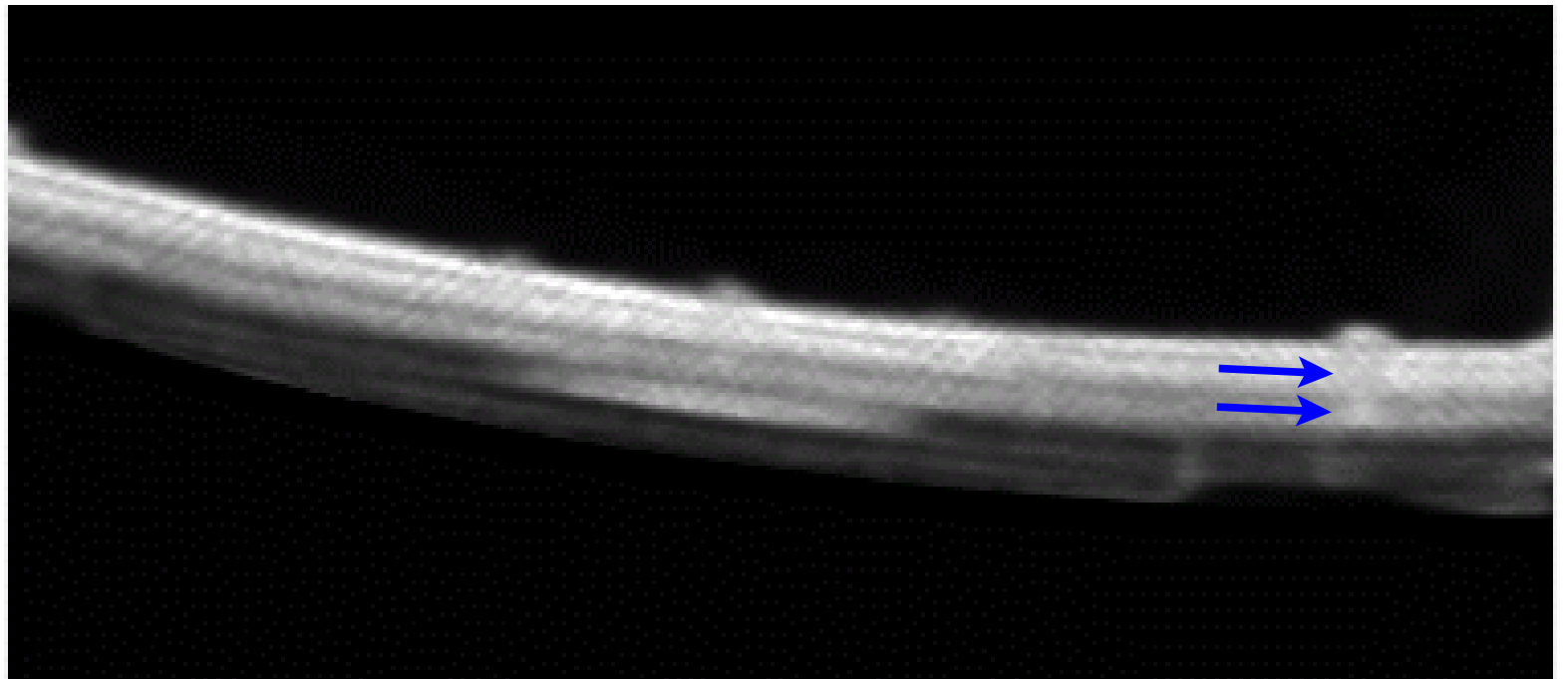
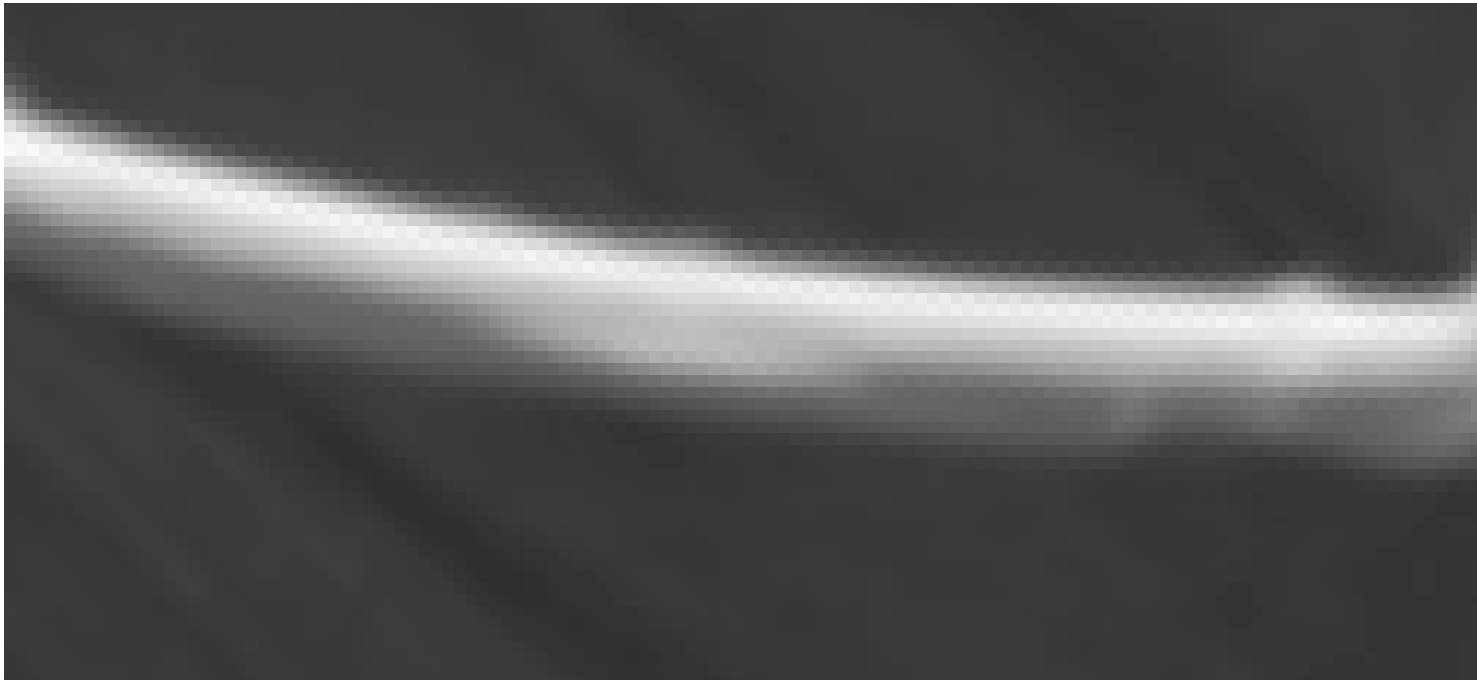




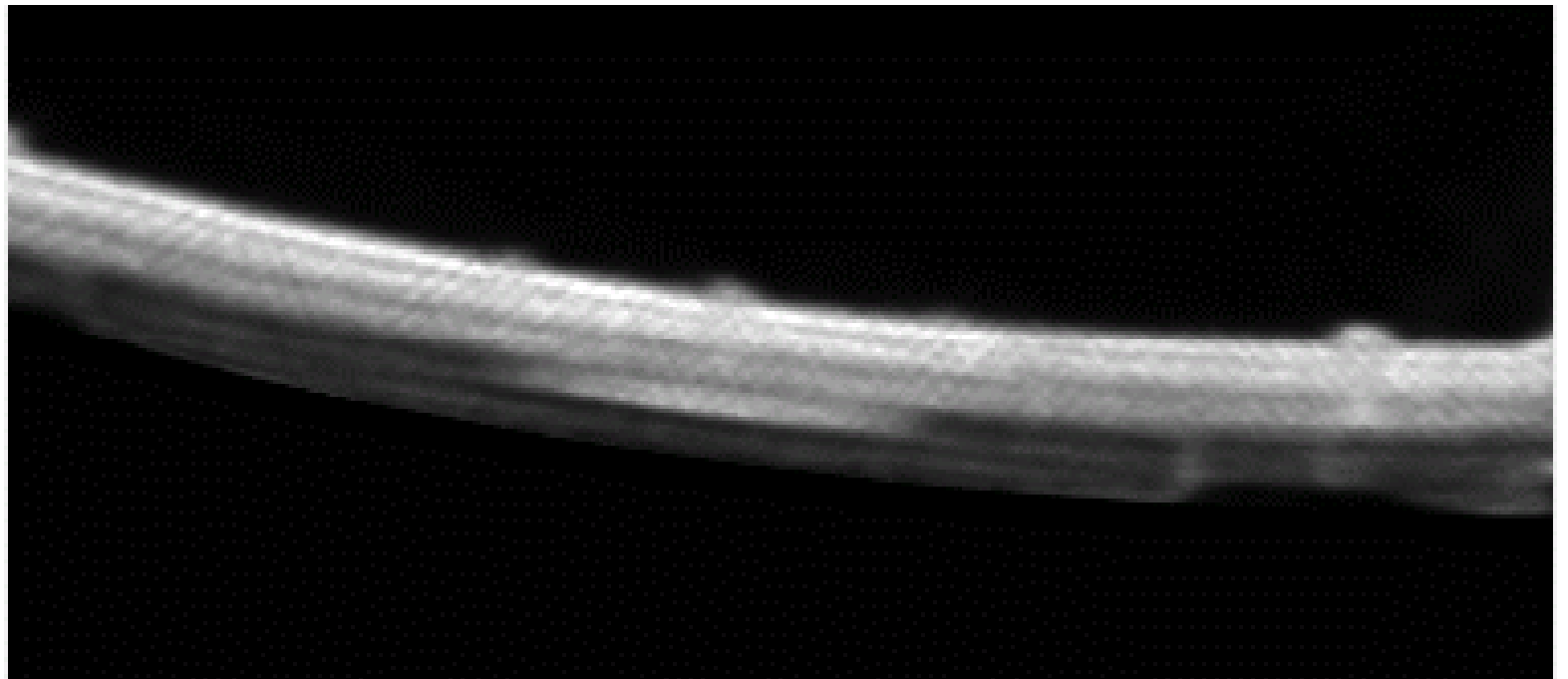
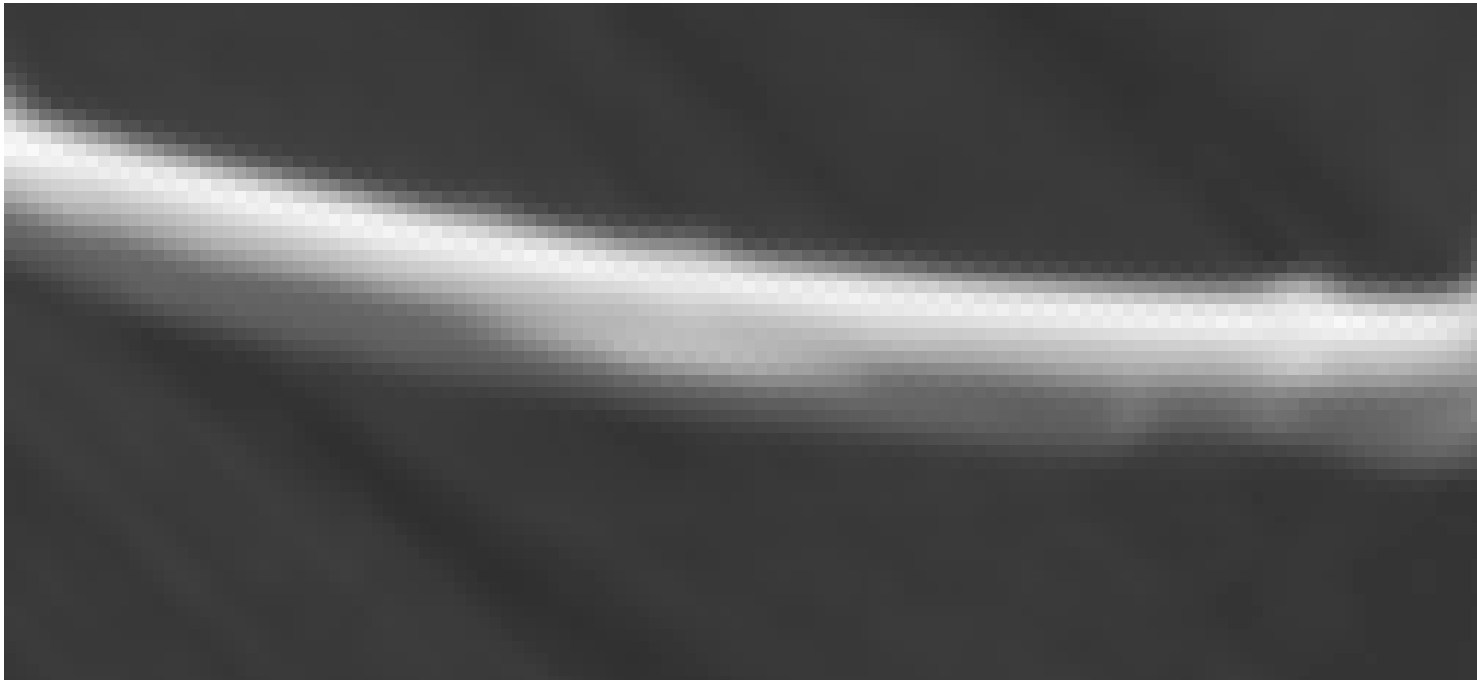
Distribution Statement A: Approved for public release, distribution is unlimited.



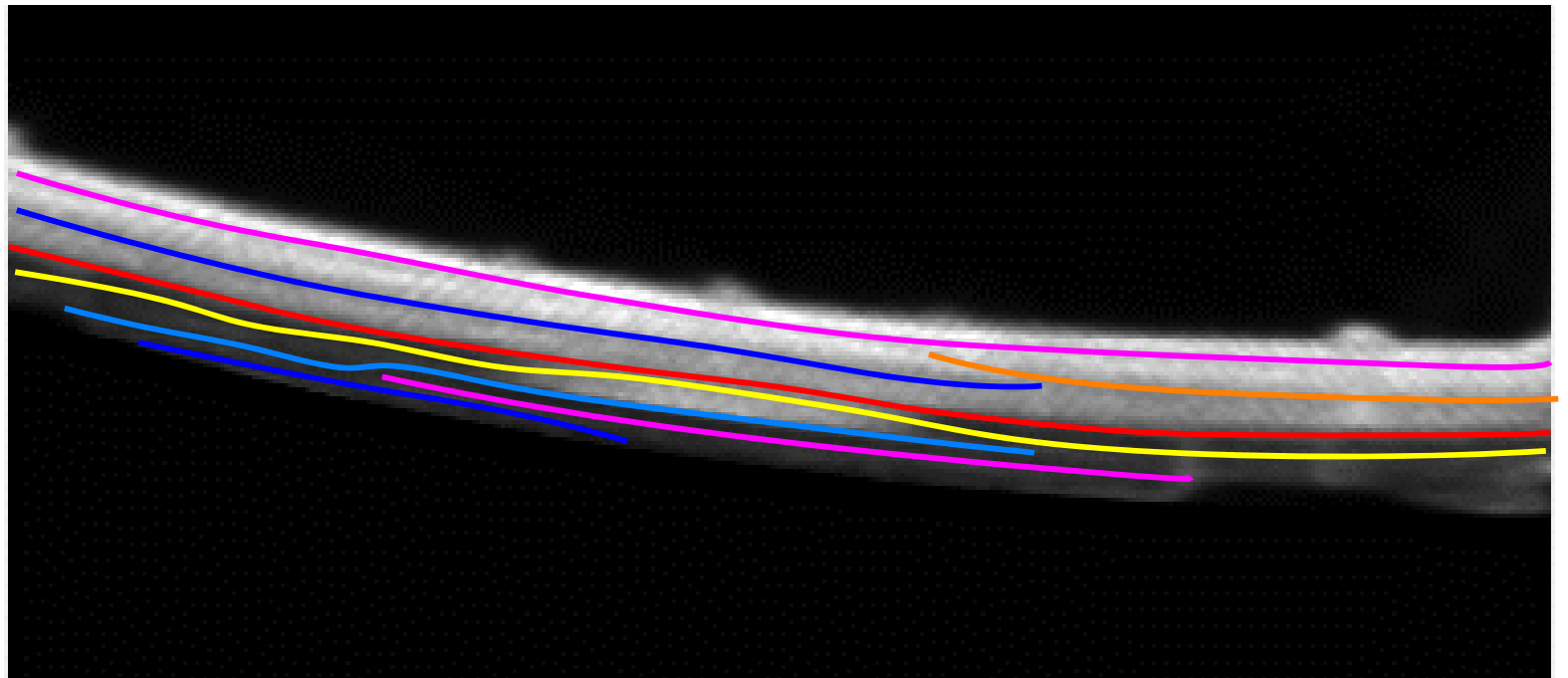
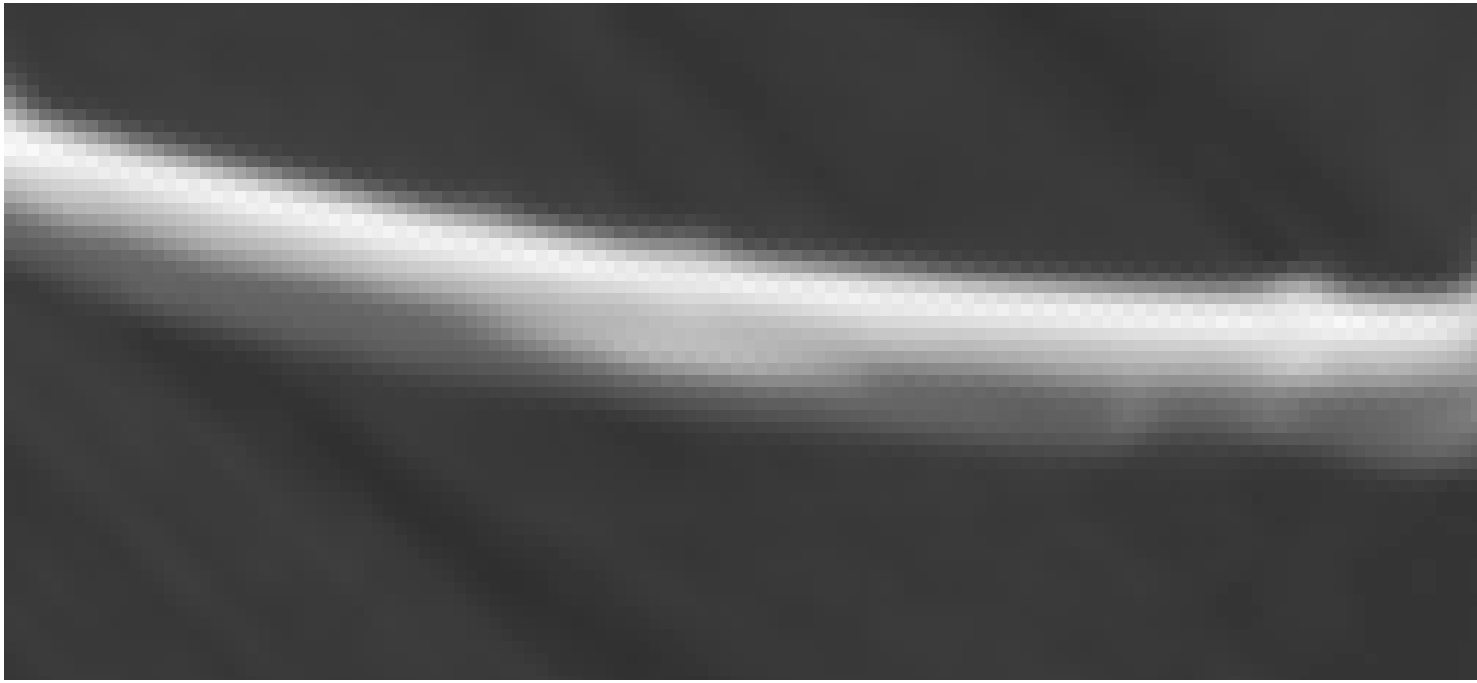
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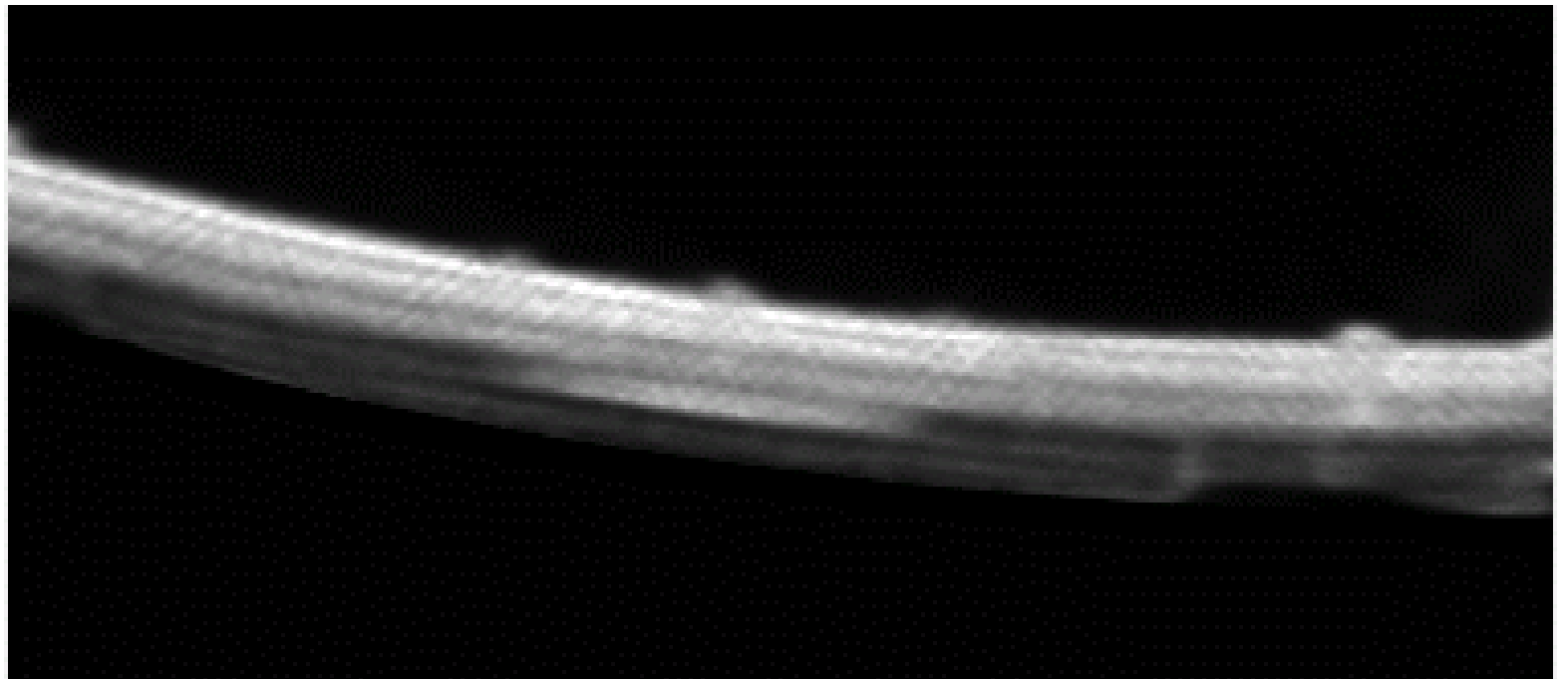
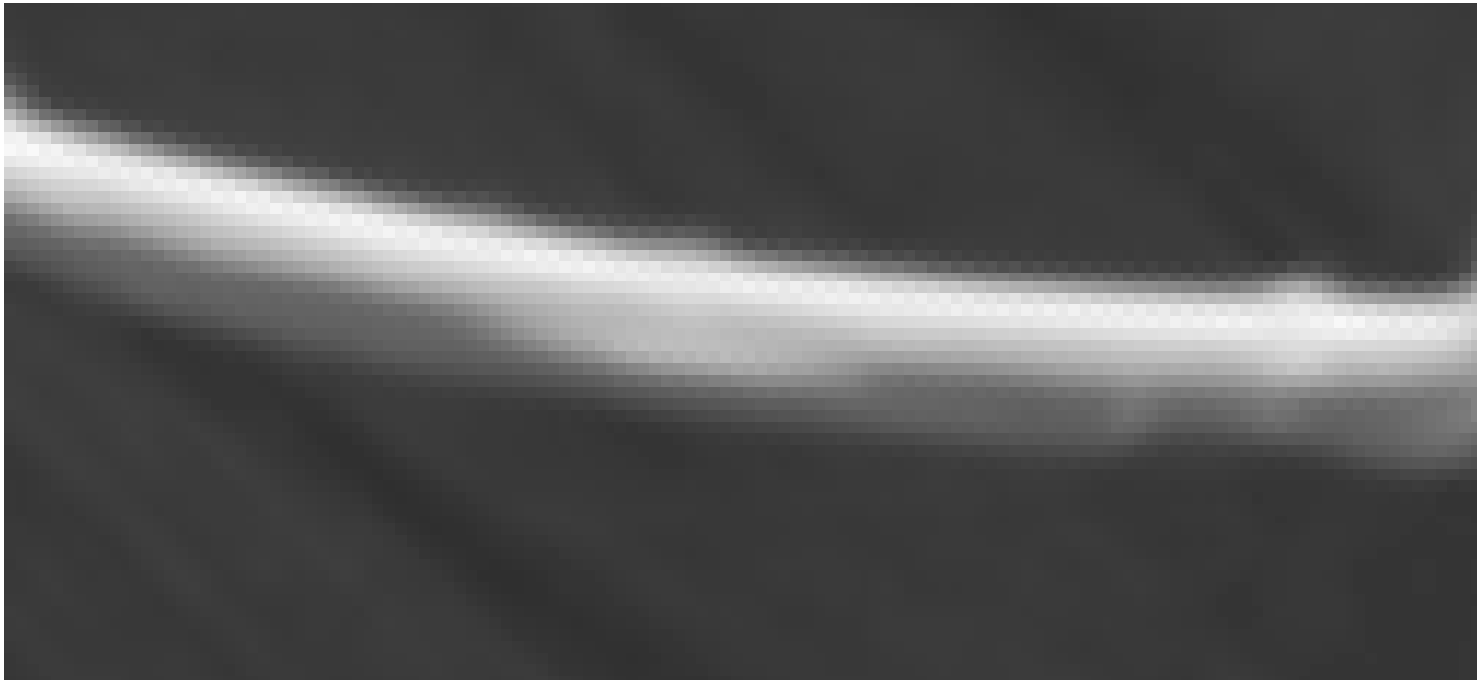
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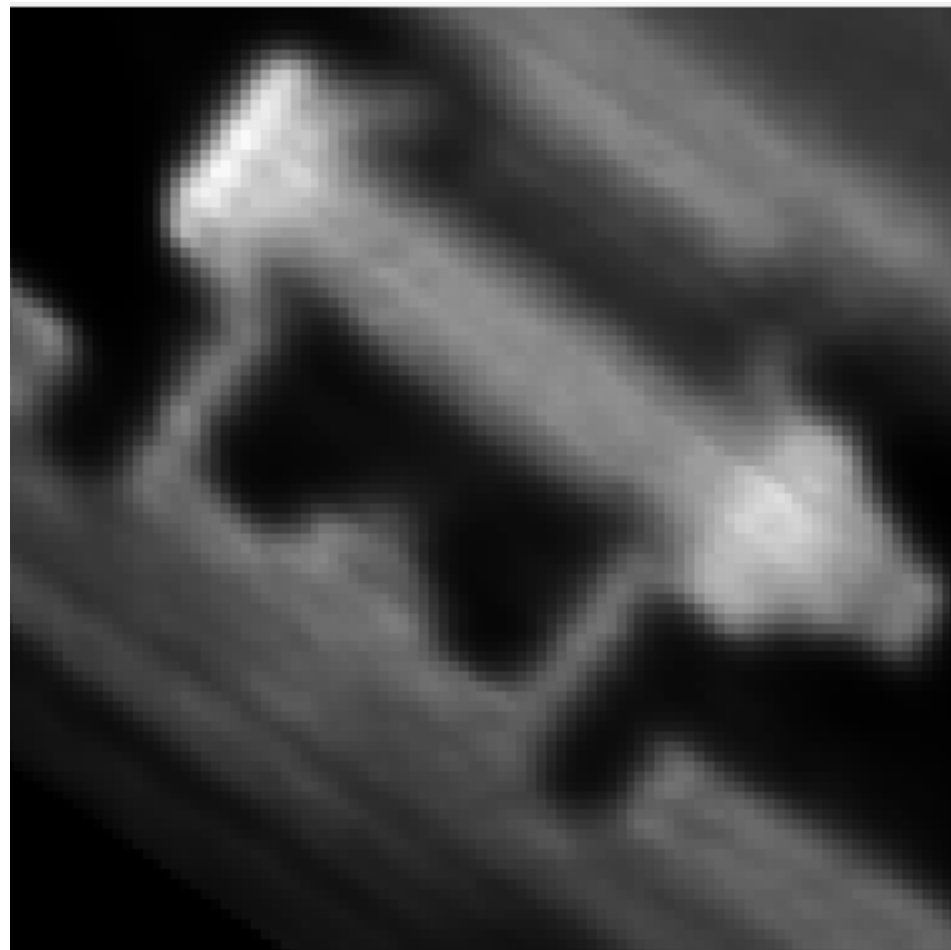
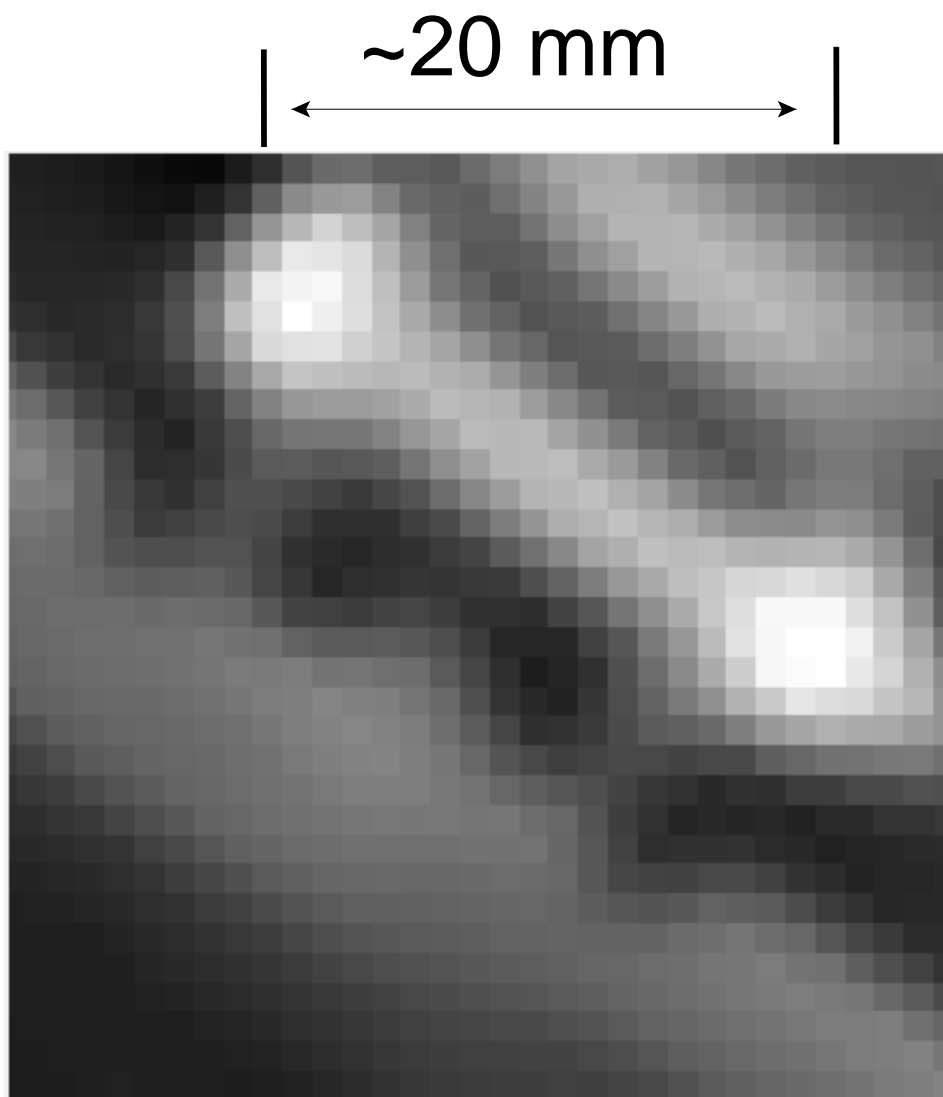
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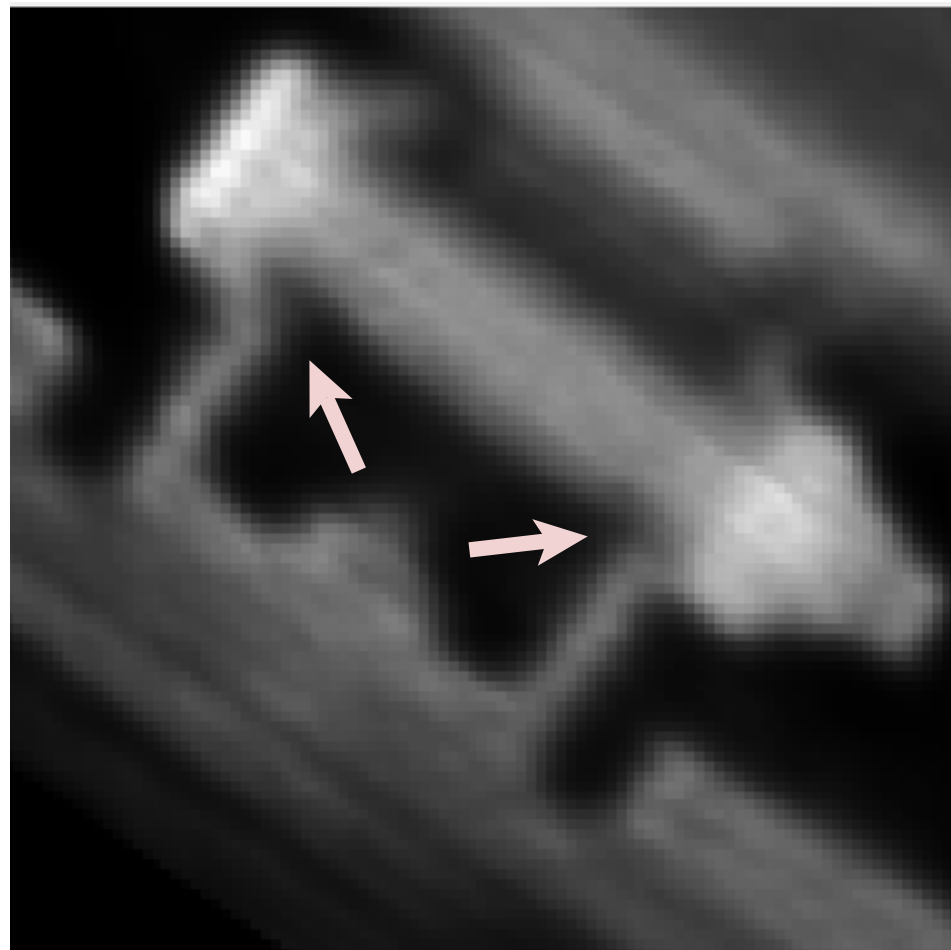
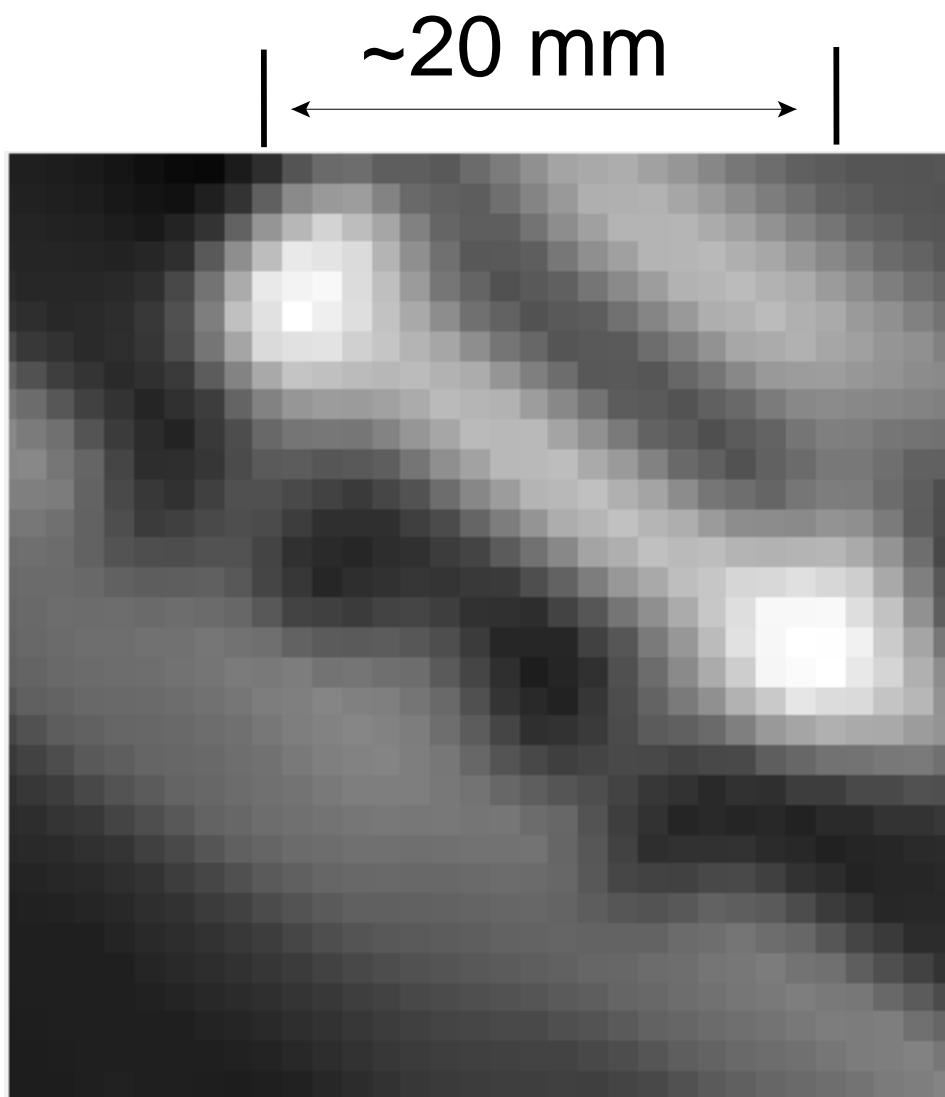


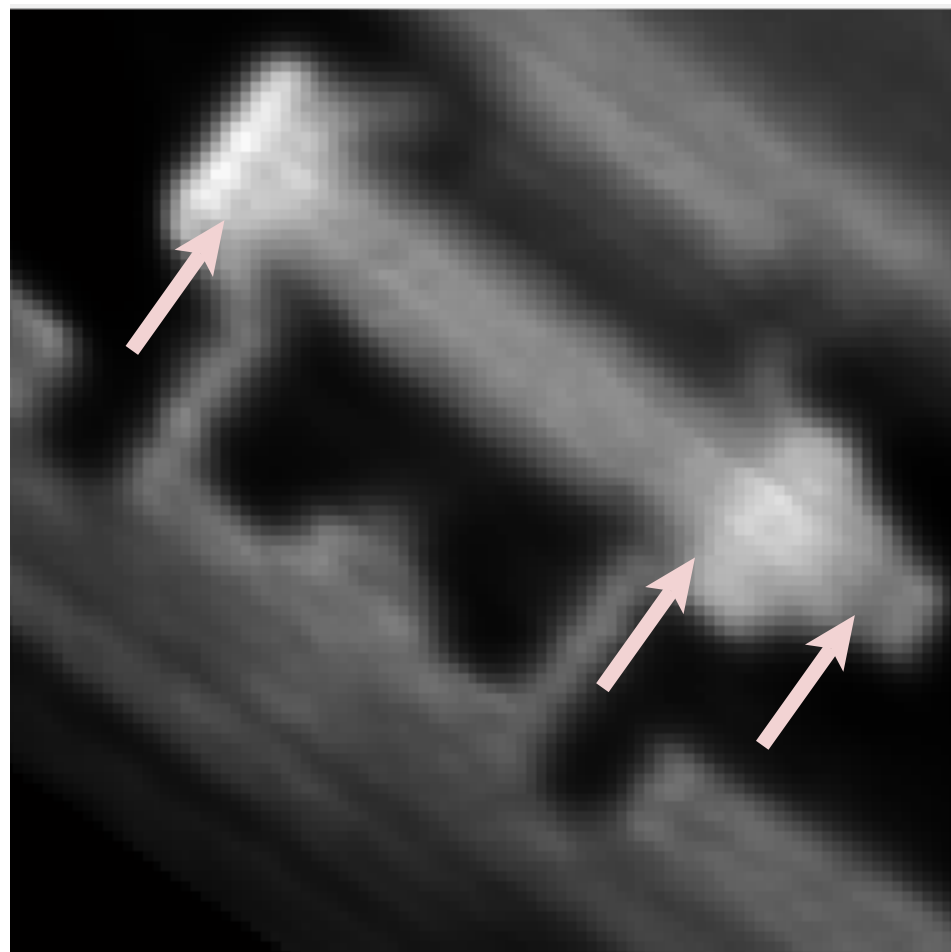
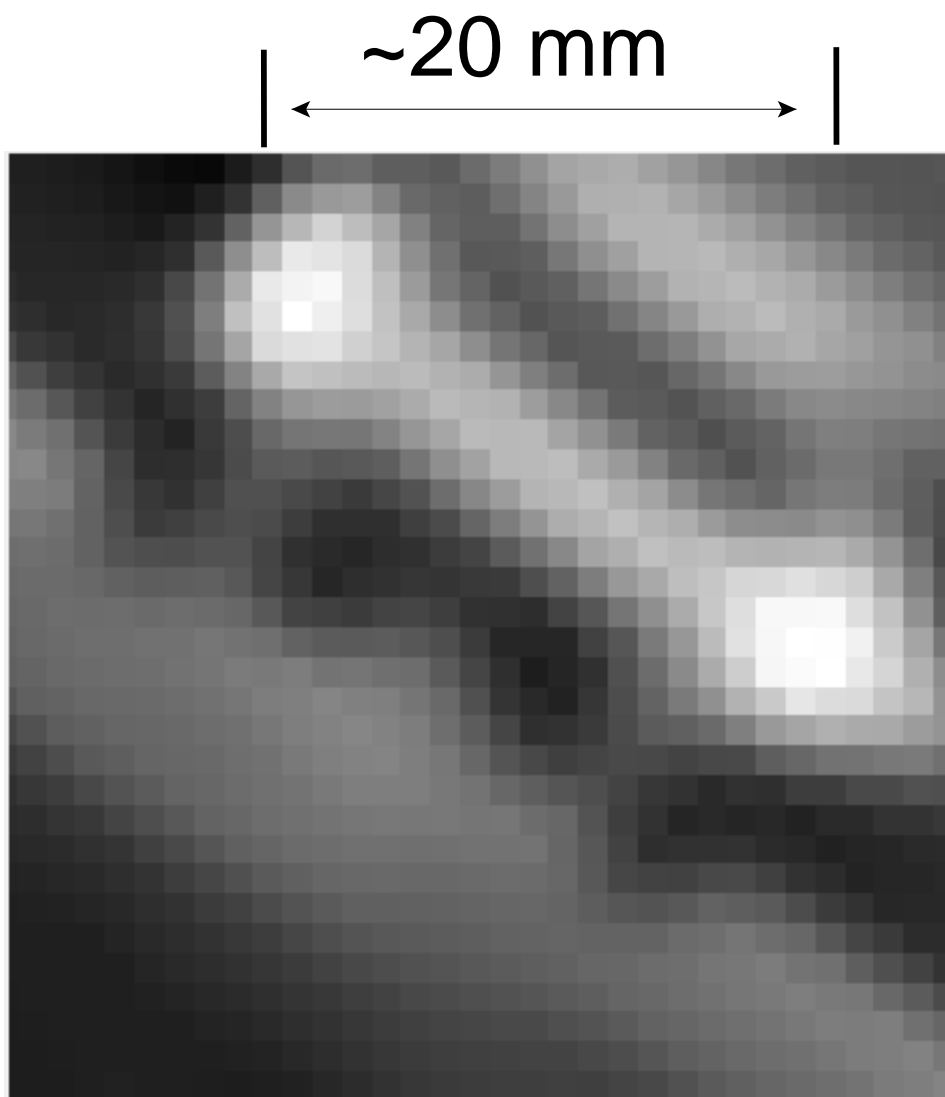
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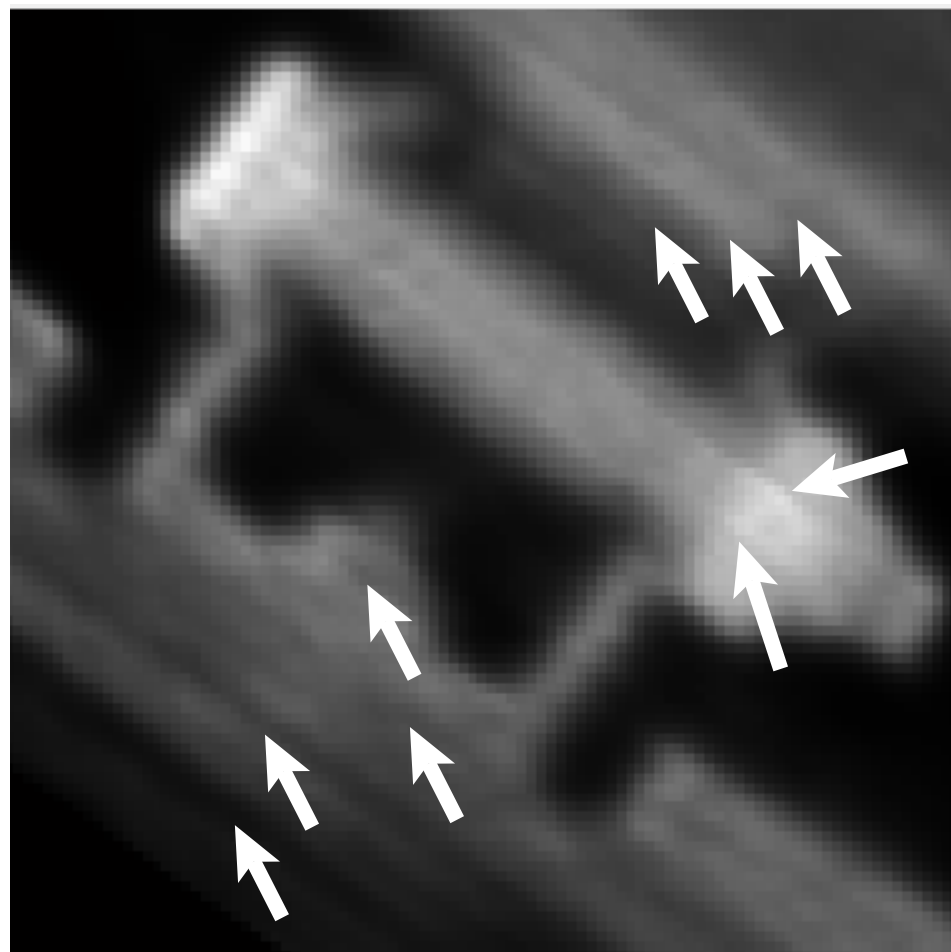
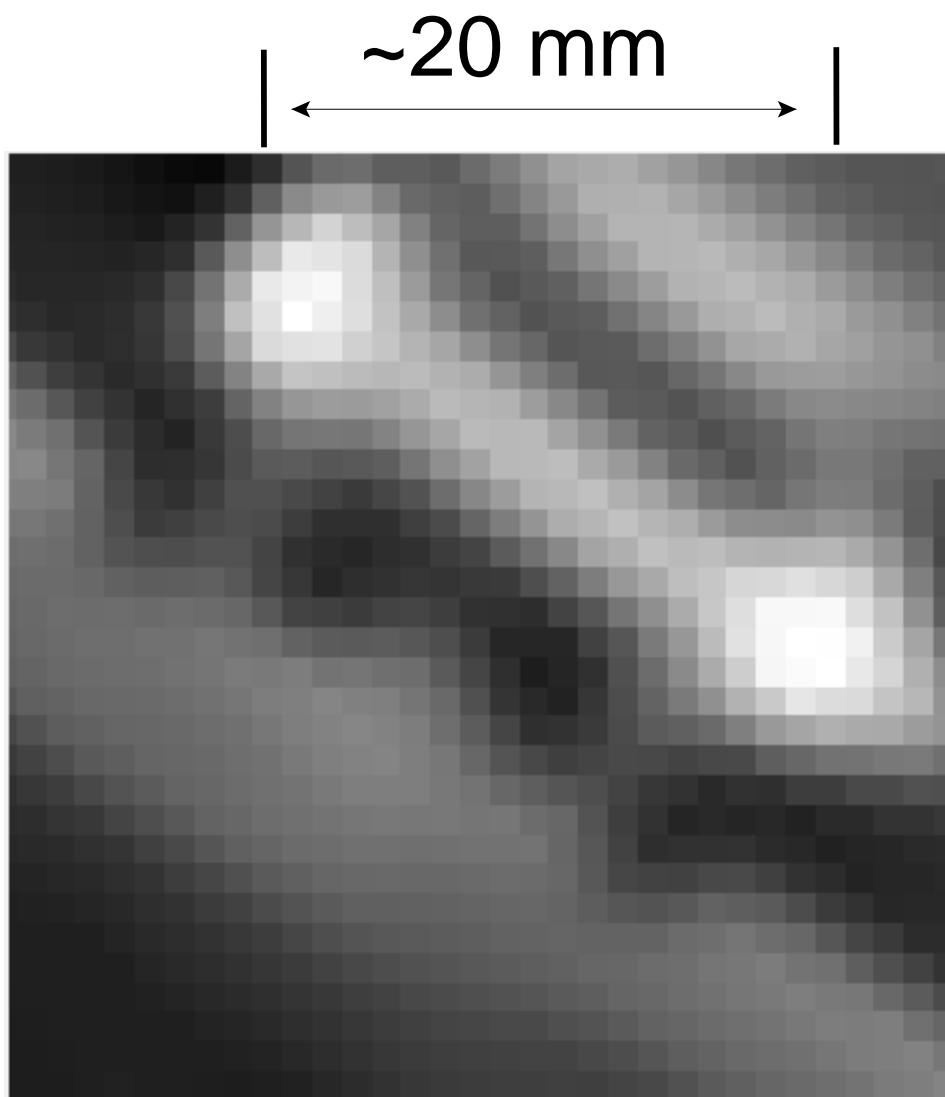


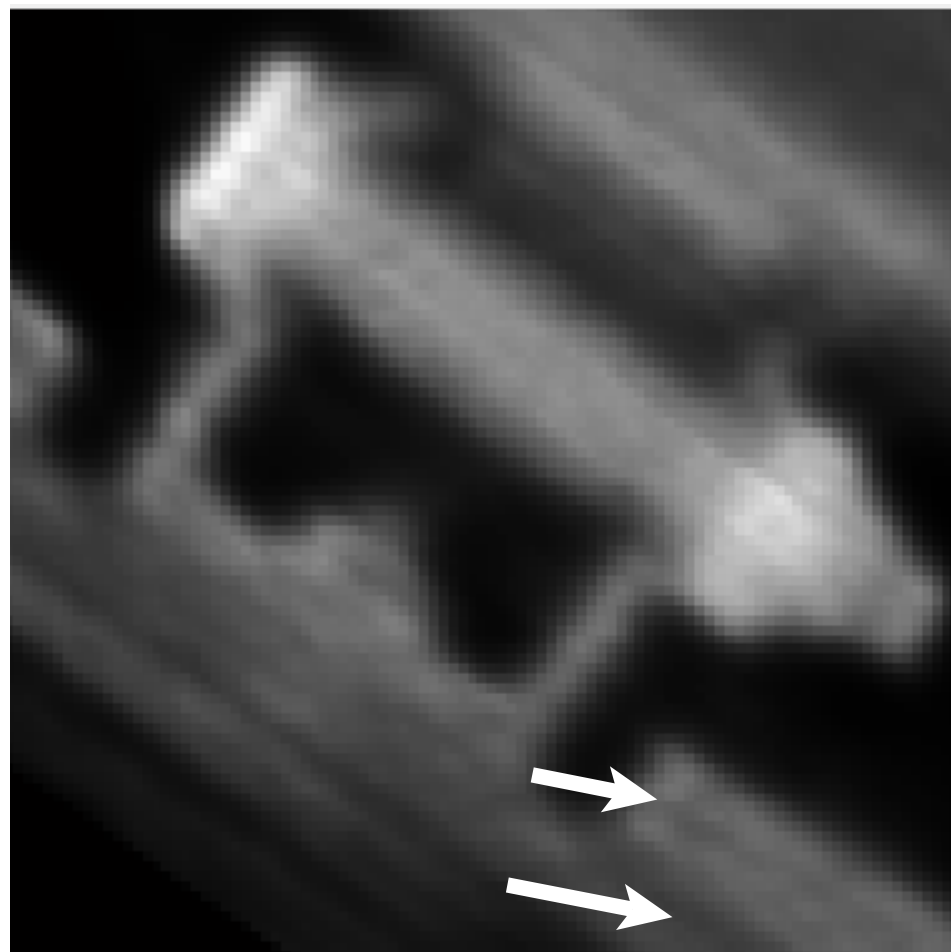
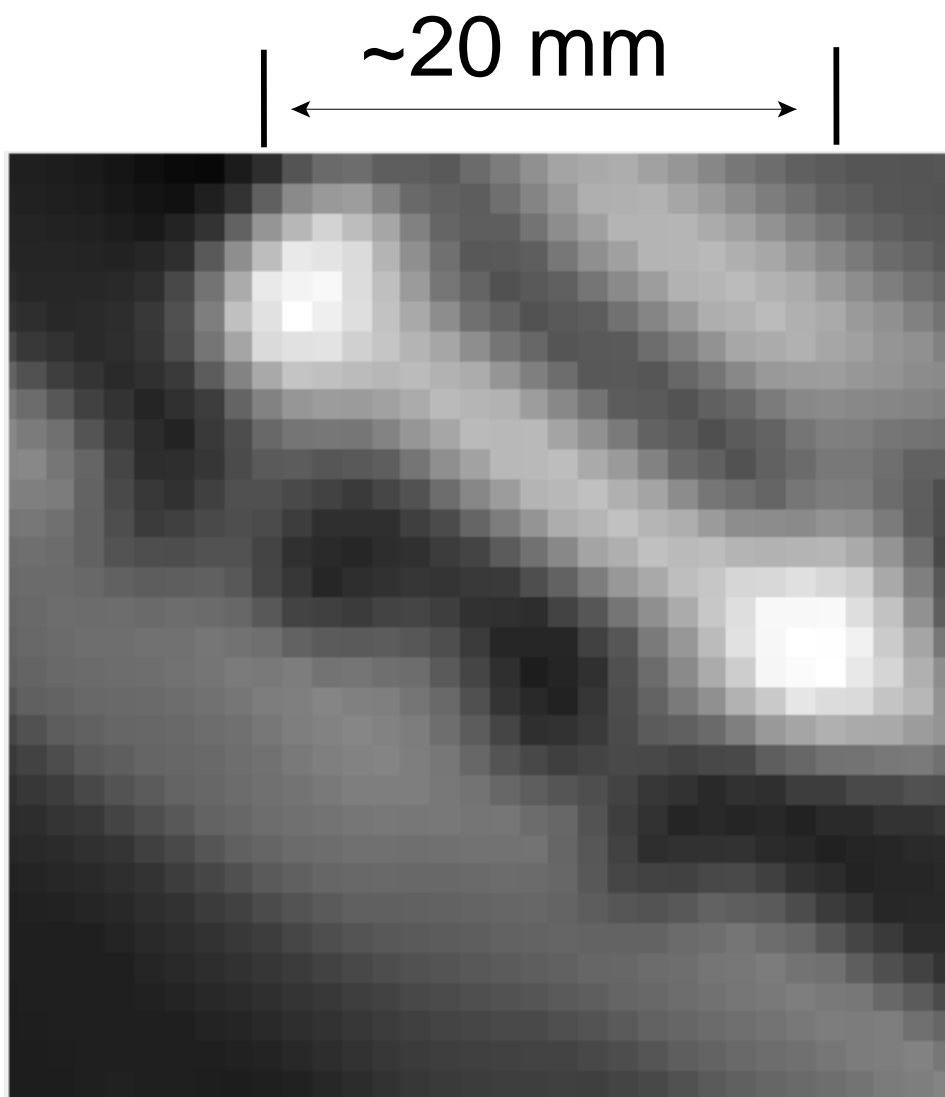
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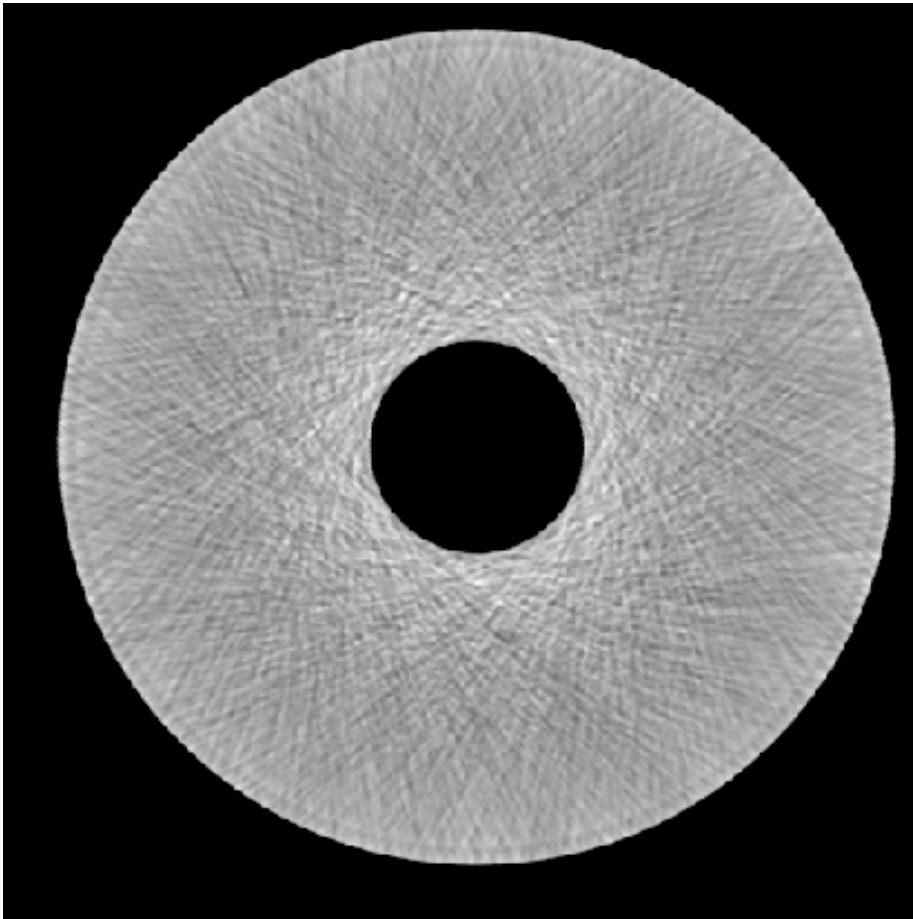






Low photon flux due to high attenuation

Filtered backprojection



EM

